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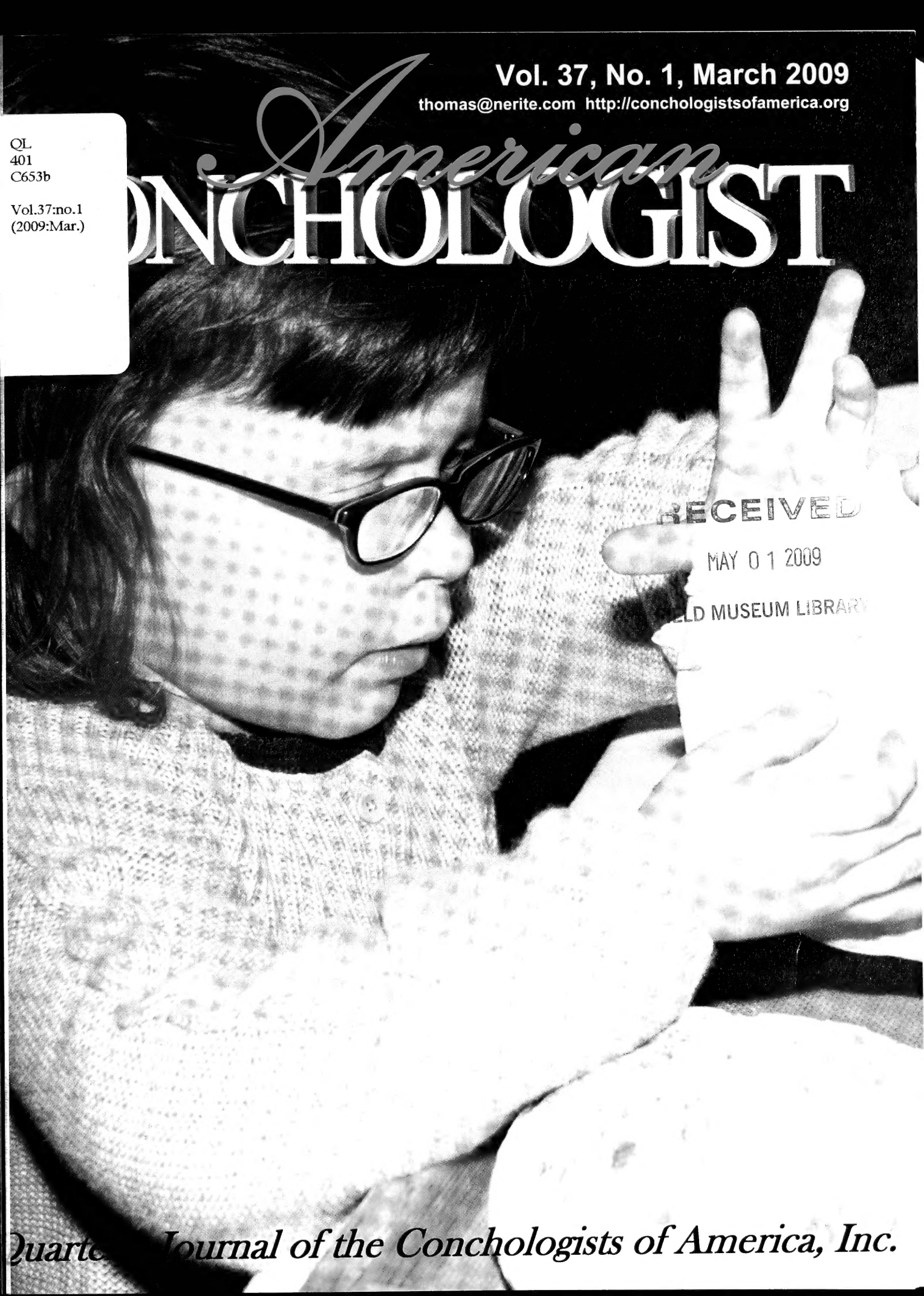
American Conchologist



Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS OF AMERICA, INC.

Volume 37, No. 1 March 2009

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver (owned and operated by the University of Georgia) at: listserv@listserv.uga.edu Instructions for joining Conch-L are on the COA web site.

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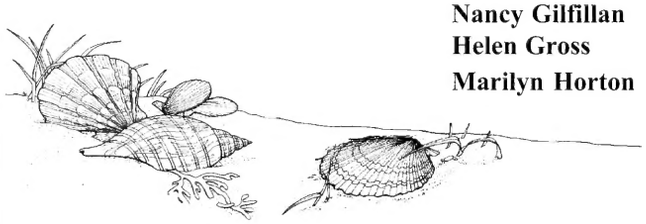
BACK ISSUES are available from Hank Foglino, Properties Director. Prices: prior to 1985, $3 each, 1985 to current, $5 each; postage extra.

IN THIS ISSUE

In Memoriam:

Bill Clendenin
Nancy Gilfillan
Helen Gross
Marilyn Horton

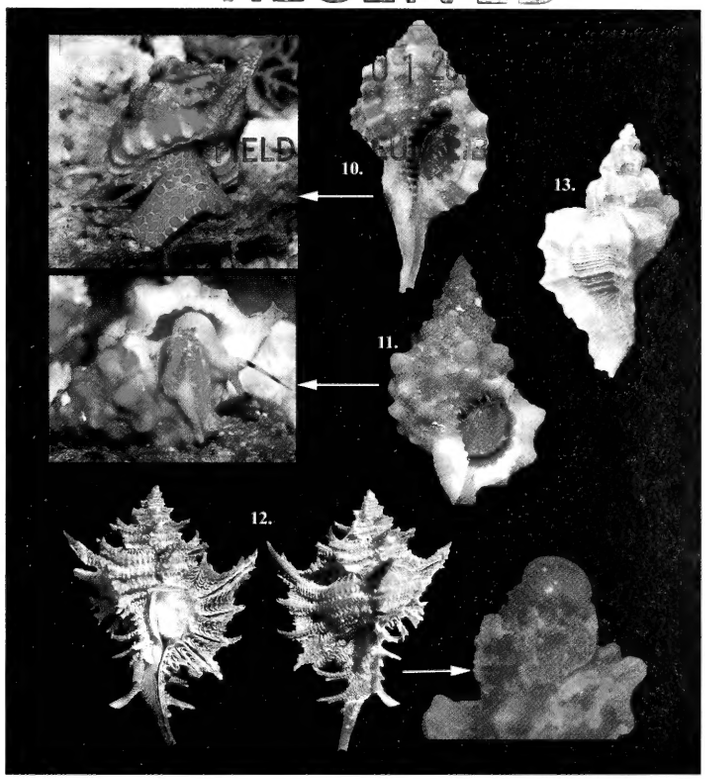


Front cover: A future conchologist examines a seashell at the shell show at the Academy of Natural Sciences, Philadelphia, Pennsylvania. This annual event draws a crowd every year, more than doubling the Academy's average weekend attendance. Who says today's kids are only interested in their iPods? See story on page 20. Photos courtesy of Paul Callomon.

Back cover: Once again we have a great piece of art by COA member Arline Reimann of California. This is a piece done in 1969 and features several well-known and collectable shells.

Editor's Comments:

In the December issue, Vol. 36, no. 4, the article "Molluscan findings from a recent dredging expedition off the Louisiana coast" by Emilio Fabián García contains an editing error. The numbers on the second plate were inadvertently transposed for ***Murexiella hidalgoi* (Crosse, 1869)** (number 13, not number 12) and ***Pteropurpura bequaerti* (Clench & Pérez Farfante, 1945)** (number 12, not number 13). With apologies to Emilio, the corrected plate is shown below with the original caption. The numbers for the species in the text of the original article were correct.



10 - *Cymatium rehderi* A. H. Verrill, 1950; 47mm, 28°03.748'N, 92°27.523'W, in 64-66m, plus living animal (photo by Charlotte Thorpe). 11 - *Bursa ranelloides* (Reeve, 1844); 27°49.014'N, 92°53.756'W, in 92-86m, plus in situ image (Charlotte Thorpe coll.; photo by Charlotte Thorpe). 12 - *Murexiella hidalgoi* (Crosse, 1869); 26.2mm, 28°05.009'N to 28°05.348'N, 91°11.365'W to 91°09.093'W, in 110-109m (EFG 28604). 13 - *Pteropurpura bequaerti* (Clench & Pérez Farfante, 1945); 28°04.675°N to 28°05.020'N, 91°38.545'W to 91°36.140W, in 100-104m (EFG 28621).

Note to COA members: The December issue had proposed changes to the COA constitution that would align the constitution with recent changes in the organization's by-laws. The printing of these proposed changes serves as official notice of such change (required at least 30 days prior to a vote). The proposed changes will be voted upon during the business meeting at the annual COA convention in Clearwater, Florida, 19-23 July 2009.

The Department of Malacology at the Academy of Natural Sciences of Philadelphia

Paul Callomon
Robert Robertson

The United States has a remarkable number of museum shell collections, the largest of which were mostly founded during the nineteenth century. Among the most prominent, in terms not only of sheer size but also of breadth and scientific significance, stands that of the Department of Malacology at the Academy of Natural Sciences in Philadelphia. It is the fourth largest shell collection on Earth, and the oldest in the USA. There are roughly half a million dry lots, including between 13,000 and 14,000 that contain type specimens. Its extensive historical sets of endangered and extinct species continue to grow in scientific value as habitat loss and climate change accelerate, while field collecting in some of the most diverse but threatened environments on the planet keep it abreast of current events. Here we will present a brief history of the department and introduce some of our current projects.

The Academy of Natural Sciences of Philadelphia was founded in January 1812 as a club for gentlemen interested in nature, and the study of mollusks formed part of its activities from the very beginning. That same month, the second floor of a house on the east side of Second Street near Race Street was rented to house the collection and library. In August it was moved to larger quarters on the second floor of a building at Second and Arch streets. At the time of the Academy's birth the collection consisted, according to a contemporary account, of "some half dozen common insects, a few madrepores [corals] and shells, a dried toad fish and a stuffed monkey: a display of objects of science calculated rather to excite merriment than to procure respect." Contributions from the growing body of members nevertheless soon transformed this "curiosity cabinet" into a rapidly growing natural history collection.

In 1815, Academy founder Jacob Gilliams built a hall on a vacant lot at Second and Arch Streets. The Academy occupied this building until 1826, when it moved to a larger building at the southeast corner of 12th and Sansom (then George Street). In 1839 it moved again to still larger quarters at the northwest corner of Broad and Sansom.

The activities of the Academy quickly grew in scope from mere amusement and the collection of curiosities to the scientific study of natural history. The shell collection expanded rapidly, reflecting the popularity of shell collecting as a hobby at the time. By 1829, the Academy boasted 1200 mollusk species, and was actively soliciting donations from amateur collectors. By 1871 the collection contained over 100,000 examples representing 20,000 species and was matched only by that of the Natural History Museum in London. The first of the current Academy buildings was completed in 1894 and opened to the public in 1896.

Thomas Say (1787-1834)

An apothecary by training, Say was elected a member of the Academy on March 21, 1812. He was appointed the first curator of the nascent museum and lived on the premises for several years, receiving a salary of just 75 cents a week. Say's reputation as a naturalist was already widespread, however, and he had written several articles on American natural history for the American edition of *Nicholson's British Encyclopedia*. The second volume (1817) contained an article by Say entitled "Conchology," consisting of fifteen pages and four plates. This was the first paper on mollusks by an American to appear in that country. It contained a general statement of the principles of the science, followed by descriptions of 31 American land and freshwater species.

Say was later appointed chief zoologist to two expeditions to the headwaters of the Mississippi and elsewhere. In 1825, he left the Academy for New Jerusalem, a Utopian community at New Harmony in Indiana, where he died in 1834, aged just 47. Many of Say's specimens were subsequently returned to the Academy by his widow, Lucy, but distinguishing the types of his many species from among them has rarely proven possible.

Charles Alexander Lesueur (1778-1846)

Already an established naturalist, Lesueur arrived in the United States from France in 1816 and settled in Philadelphia a year later. He was more of an ichthyologist than a conchologist, but his paper on *Firoloida* (Pterotracheidae), in volume one of the *Journal of the Academy of Natural Sciences* was only the second native piece on mollusks published in the United States and the first on a species from abroad. Lesueur followed Thomas Say to New Harmony, but became disillusioned with the community after Say's death and returned to France, where he became a curator in the museum at Le Havre.

Isaac Lea (1792-1886)

Dr. Isaac Lea of Philadelphia was born in Wilmington, Delaware, and died at the age of 95 in 1886. In 1815 he and his mother, who was fond of botany, became members of the newly formed Academy of Natural Sciences.

In 1825 Lea began his famous studies of land and freshwater shells, specializing particularly in the freshwater mussels. In 1836 he published his first 'Synopsis' of the genus *Unio*, a thin work of 59 pages. By the fourth edition of 1870, it had grown to 214 pages, in a larger format. Lea continued his studies of the Unionidae until 1874, describing nearly 2000 new fossil and Recent species. Not content with depicting the shells alone, he figured the embryonic forms of thirty-eight unionid species and described the soft parts of more than two hundred.

Lea also investigated physiological questions, such as the sensitivity of mollusks to sunlight and differences between the sexes. He became President of the American Association of Sciences in 1860 and presided over the Academy of Natural Sciences in Philadelphia for several terms.

Timothy Abbott Conrad (1803-1877)

Timothy Conrad contributed greatly to our knowledge of the paleontology of the Atlantic and Gulf Coastal Plain, publishing around 75 papers in the Academy's Journal and Proceedings. He was a curator at the Academy from 1835 to 1836. He lived in Trenton his entire life and was famously disorganized, making his notes on scattered small pieces of paper. He made frequent trips to the Academy to pursue his research on mollusks. Morton and Say published some of Conrad's species for him so that he would get credit, as he had done the research. Sadly, most of his unpublished papers in progress were disposed of after his death. Conrad published extensively on both Recent and fossil mollusks, but also as a poet of some renown.

Sherwood Raymond Roberts (1845-1928)

The Philadelphia businessman S. R. Roberts became interested in natural history at an early age. At 20 he was proposed for membership in the Academy, and at the time of his death he had been a member for over 62 years. Roberts was one of the group of Academy members who founded the Conchological Section on December 26, 1866. He was made Recorder, a position he held for many years.

His first scientific paper was published in the American Journal of Conchology for 1868, under the title "Description of a New Species of *Cypraea*." Although he built up a general collection of some size, his main interest was always in the Cypraeidae. In 1885, his monograph of this family was published in Tryon's "Manual of Conchology."

Upon the death in 1888 of Mr. Tryon, who had been his closest friend for many years, Roberts assumed the office of Treasurer of the Conchological Section, a post he continued to hold for forty years in all. Though unpaid, this position nevertheless demanded a considerable amount of work. For many years until he retired from active business, this was for Roberts the work of evenings and other hours usually devoted to recreation.

Benjamin Sharp (1858-1915)

Born in Germantown, Dr. Sharp was a distinguished zoologist. He was educated at Swarthmore College and at the medical school at the University of Pennsylvania, receiving his PhD in 1880. He became Professor of Invertebrates at the Academy of Natural Sciences in 1890 after a period at the University of Wurzburg in Bavaria that culminated in his thesis "The Eyes of Molluscs."

Sharp was the zoologist of Commander Peary's first expedition to the Arctic in 1891. He also made expeditions to the Bering Sea, Hawaii, and the West Indies, collecting zoological specimens and taking photographs for the Academy. In 1890 he became the Academy's Corresponding Secretary, a position he held for 11 years. Sharp published a total of twenty papers in the Proceedings of the Academy and was a renowned photographer.

Department Chairmen

On December 26, 1866, the Conchological Section was established with George Tryon as its chairman. Though there have been no gaps, just five others have held that position in the 143 years since then. This unmatched record of curatorial continuity has provided the collection with proper care and continued expansion through field collection and donations of material.

George Washington Tryon Jr. (1838-1888)

Born May 20, 1838, in Philadelphia, Tryon was the son of the founder of the E. K. Tryon Firearms Company. Aside from his work in malacology he was a musical composer, a publisher, and a very successful businessman. His career was cut short by his death at the age of 50 on February 5, 1888, after a week's illness.

The Conchological Section was founded at Tryon's prompting in 1866. He was instrumental in gaining the Academy the first of its present buildings and became the first secretary of the building fund of the board of trustees in 1867. Under his stewardship, the Conchological Section was able to contribute $3000 to the work, a sum that Tryon matched from his personal funds.

Tryon was a Curator from 1869 to 1876. Under his direction the library and the numerous collections of the museum were safely transferred to the new building, starting in January 1876. He was a constituent member and Conservator of the Section for thirteen years from 1875. The present admirable condition of this

immense collection is testimony to his rare skill and unremitting labor.

Tryon was editor and owner of the *American Journal of Conchology* from 1865 to 1872 and published the first nine volumes of his *Manual of Conchology* between 1878 and 1887. He also published *Structural and Systematic Conchology* (1882-84) and *American Marine Malacology* (1873). At the time of his death, Tryon's own collection was very extensive and it helped to make the Academy the primary center of molluscan research in the United States in the nineteenth century.

Henry Augustus Pilsbry (1862-1957)

Henry Pilsbry came to the Academy in 1887 during its first Golden Age and took his place alongside luminaries such as Joseph Leidy, Edward Cope, Angelo Heilprin, and George Tryon. In this favorable environment Pilsbry exhibited extraordinary productivity. The bulk of his prodigious output was original, based on exacting laboratory and field work. Tryon's *Manual of Conchology* did not perish with its creator, for a few months prior to his death Tryon had hired Pilsbry as Assistant Curator with the express object of securing a successor to continue the work. The young man assumed Tryon's position as Conservator of the Conchological Section of the Academy and with a confidence that belied his youth settled down to his mammoth task. He eventually expanded the *Manual* to 45 volumes.

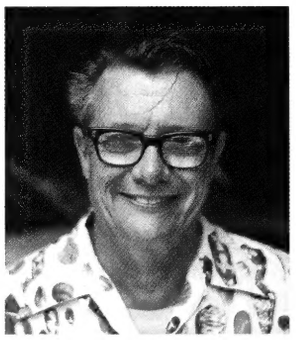
Pilsbry also added to his fame as founder and editor of the *Nautilus*, a malacological periodical that continues in print today (now published at The Bailey-Matthews Shell Museum, Sanibel, Florida). He was elected one of four Curators at the Academy on April 2, 1895, and was made Professor of Malacology, which meant he gave evening lectures. Pilsbry was given Edward Vanatta as a student, supported by the Jessup Fund. Pilsbry became one of the greatest malacologists of all time. His monumental "Land Mollusca of North America," a four-volume monograph, is considered his masterwork. As the author of well over 1000 separate articles and books in addition to his share of the *Manual*, he is the most prolific conchological writer the world has ever seen, and with over six thousand new scientific names to his credit, he stands alone in the field of molluscan taxonomy.

From the start, Pilsbry was quick to profit from the generous fund left by Tryon for the purchase of shells. Valuable new material was obtained from dealers and collectors worldwide, and Pilsbry described and named much of it as new to science.

By 1900, Pilsbry, now 38, had proven himself to be a better researcher than Tryon. Collectors such as Yoichiro Hirase, James Ferriss, Frederick Stearns, and others sent him gifts of priceless material in return for junior authorship with the leader in the field. While the venerable William H. Dall in Washington was cutting a wide swath in marine mollusks, Pilsbry was concentrating on a vacant niche that was dear to his heart, the land snails. As the years passed, the Academy's collection swelled with Pilsbry's types in new land, freshwater, and marine species. His several expeditions further contributed to the Academy's collection. During his tenure as Curator, the collection was increased by nearly 130,000 lots, about 4000 of which were primary types.

R. Tucker Abbott (1919-1995)

Henry Pilsbry was succeeded as department chair by a young man of almost equal energy. Robert Tucker Abbott maintained Pilsbry's emphasis on publication, producing several major books and innumerable papers during his long career. His early work, for the US government during World War II, identified freshwater mollusks as the hosts of dangerous parasites in Asia, and his PhD thesis was on the freshwater genus *Assiminea* in the Philippines.

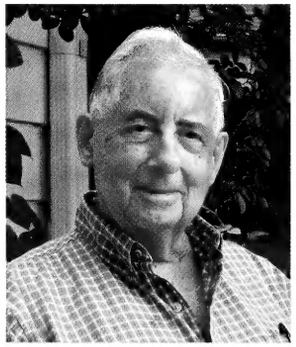


Abbott joined the Academy in 1954 as the first holder of the Pilsbry Chair of Malacology and gave increasing attention to Indo-Pacific marine mollusks. During his fifteen years' tenure he organized several major collecting expeditions in collaboration with private individuals and foundations. Abbott supervised the re-housing of the vast dry mollusk collections and the reorganization of the curation system. Assuming co-editorship of the *Nautilus* in 1957, he began publishing his own serial, *Indo-Pacific Mollusca,* two years later.

A strong advocate for amateur workers in science, Abbott encouraged the involvement of collectors and enthusiasts in the Academy's activities. In 1955 he founded the Philadelphia Shell Club, which continues to be based at the Academy. Throughout his career he built strong partnerships with major collectors worldwide. Abbott's increasing collaboration with John DuPont led to his appointment as the first holder of the DuPont Chair of Malacology and Assistant Director of the new Delaware Museum of Natural History in 1969.

Robert Robertson (1934-)

Robert Robertson joined the Academy after gaining his PhD from Harvard in 1960, and remains curator emeritus to the present day. From 1969 to 1972 he held the Pilsbry Chair in Malacology. Robert's extensive work has focused primarily on marine gastropods, with a strong emphasis on the anatomical and ecological characters of the animals themselves and particular focus on the families Phasianellidae, Architectonicidae, Epitoniidae and Pyramidellidae. He took part in many of the Academy's expeditions during the 1960s and 1970s, collecting extensively in both hemispheres, and was a member of the International Indian Ocean Expedition of 1964. In recent years he has been a regular contributor to *American Conchologist* and has coordinated Academy exhibits on classical malacological books and the history of natural science in the Caribbean.



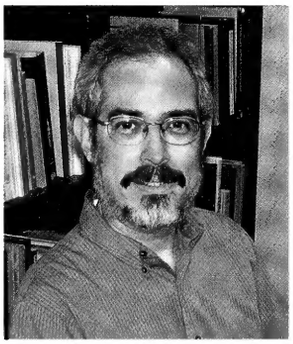
George M. Davis (1938-)

George Morgan Davis received his PhD from the University of Michigan and from 1965 to 1970 was Chief of the Malacology Section in the 406th US Army Medical Laboratory, based in Japan. He joined the Academy in 1970 as Associate Curator of Malacology and became both a full curator and chairman of the department in 1972. In 1974 he and Robert Robertson became co-editors of *Malacologia*, the International Journal of Malacology, a post Davis retains to the present day.

Davis's work on the intermediate snail hosts of human parasites involved extensive field work in Southeast Asia, especially China, and garnered extensive support from the National Institutes of Health. He also studied American freshwater mussels and was very successful in gaining National Science Foundation support for the development of the Academy's collection. In 1976 he commenced the computerization of the Academy's shell collection, one of the first such projects in the world. An energetic leader, Davis mentored many students in the field. In particular his work on population genetics enhanced the Academy's standing as a modern research institution. George Davis left the Academy in 2000 to become Research Professor at George Washington University.

Gary Rosenberg (1959-)

A graduate of Princeton and Harvard, where he earned a PhD in Evolutionary Biology, Gary Rosenberg joined the Academy's staff in 1989 and became Chairman of Malacology in 2000. He started working there much earlier, however, as a high school volunteer in 1976.

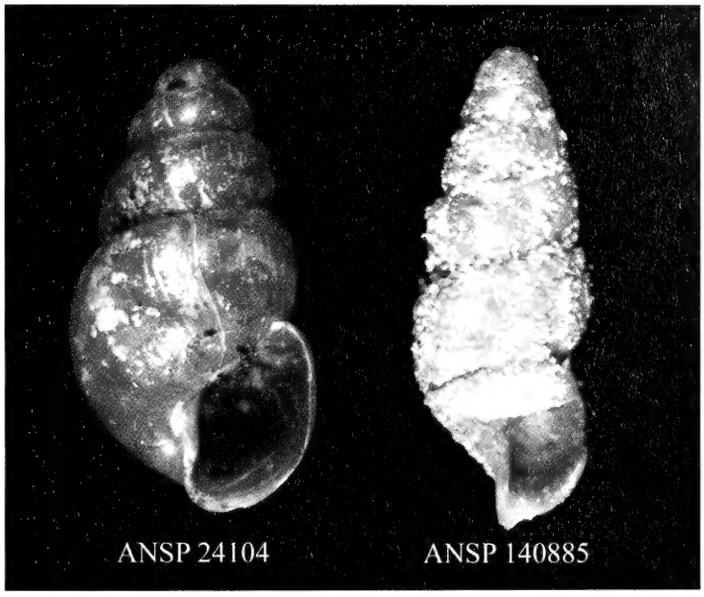


Gary's main research interests are the land mollusks of the Caribbean, with particular focus on Jamaica, marine gastropods, and the science of informatics. His vast online Malacolog database of Western Atlantic marine gastropod species is the most comprehensive such resource for any geographical area. He wrote the *Encyclopedia of Seashells* (1992) and has published on the gastropod families Ovulidae, Truncatellidae and Costellariidae.

Gary has also created an online key to the Jamaican land snails, which is a model for larger efforts to provide identification tools for the Mollusca. Between 1994 and 2002 he wrote the Conchatenations column in *American Conchologist*, before taking up a concurrent five-year post as the Academy's Vice President for Systematic Biology and Evolution. He has since returned to full-time research.

Above: The main collections room in 2003 was cold, dirty, and poorly lit. The old cabinets dated to the 1950s, but some of their specimen boxes and vials came from the previous century.

Below: Most of the glass vials had reached the end of their lives and a few specimens were showing signs of Byne's Disease.



The department today

The department continues to be an active center for research. Alongside the continued expansion and development of the collections, several major new projects are under way.

Rehousing the Mollusk Collection

In 2001 the department secured a $500,000 grant from the National Science Foundation, matched with funds from the Hattersley Endowment, to re-house its vast dry mollusk collection. Academy staff worked with museum furniture specialists to design

state-of-the-art replacements for the 50-year-old cabinets and planned a full refurbishment of the top floor of the 1908 building. Walls were demolished and offices removed to create a single room that was fitted with a new heating and cooling system. The new cabinets were brought in forty at a time over a period of four years, and approximately ten million shells were moved lot by lot into their new homes. Individual lots then began to receive new trays and vials, and gradually one of the world's finest mollusk collections became one of the cleanest as well. By the end of the project in 2010 we will have replaced over 400,000 paper trays and about 100,000 glass vials. Careful design means the storage capacity of the new cabinets is roughly 40% greater than those they replaced, creating expansion room for many years of new additions.

Above: The new all-metal cabinets hold more shells in a stable environment with drawers made of aluminum to save weight. Below: New lighting and air conditioning were installed as well as new brightly lit workspaces for guests and visiting scientists.

The final phase of the building refurbishment was completed in late 2007, and new study areas for Academy and visiting scientists were installed early in 2008. In parallel with the physical re-housing of the collection, the specimen database was overhauled and redesigned to allow easier access and more efficient curation. The Academy's dry mollusk collection is now in fine shape as it enters its third century as one of the world's great scientific resources.

Jamaica: a hot spot of biodiversity

Jamaica is a center of diversity for land snails, with more than 500 species that are found nowhere else in the world. There are gaudy tree snails and icicle-shaped rock snails, some that would fit on a pinhead and others the size of your fist. National Science Foundation funding has enabled departmental staff to run seven expeditions to Jamaica, surveying more than 600 sites and collecting 20,000 samples.

Above: The rugged karst limestone hills of the Cockpit Country in central Jamaica hide a wealth of endemic landsnails. Below: The pulmonate snail *Thelidomus aspera* (Ferussac, 1821), a tree-dweller by day, forages on the forest floor at night. This large snail has a thick shell that can measure up to 50mm and is a dull white or cream when preserved in collections.

The various expeditions discovered dozens of new species and rediscovered several that had been feared extinct. In 2006, department chairman Gary Rosenberg and post-doctoral fellow Igor Muratov published the first comprehensive summary of the fauna

of Jamaica in more than 100 years. Another product is an illustrated online key for identifying Jamaican land snails, which is used by Jamaican scientists and students.

Natalie Blake, a Jamaican graduate student, and Dennis Uit de Weerd, a post-doctoral fellow, worked with Dr. Rosenberg on DNA studies of Jamaican snails. They found exclusively Jamaican groupings that were much larger than expected. They proved that species from the Lesser Antilles and Cuba long accepted as closely related to Jamaican species were in fact not at all closely related, as superficial similarities had masked genetic differences. This means that relatively few kinds of snail have colonized Jamaica since it emerged from the ocean 15 million years ago.

Those few snail colonists have evolved into an amazing array of species, however, with some adapted to sun-baked coastal deserts and others to the cloud forests of the Blue Mountains. Only ten percent of the original forest of Jamaica remains, but the surveys show that most snail species survive in areas of secondary growth. Knowing this, we can work toward conservation of this extraordinary diversity.

Dr. Baldomero "Toto" Olivera from the University of Utah bargaining for specimens with local shell traders.

Philippine Cornucopia

The study of mollusks in the Philippines was a new initiative for the department in 2008. With funding from the National Institutes of Health and the US Department of Energy, Academy scientists joined a consortium that seeks to marry discovery of new natural products with deeper understanding of marine biodiversity and conservation. The Academy's roles in this five-year partnership are coordinating collection and identification of mollusk species, channeling species of interest to the natural products research groups, training Philippine students in taxonomy and best practices for museum curation, and building online identification guides for Philippine mollusks.

Gary Rosenberg examining mollusks in the Marine Science Institute of the University of the Philippines, Manila.

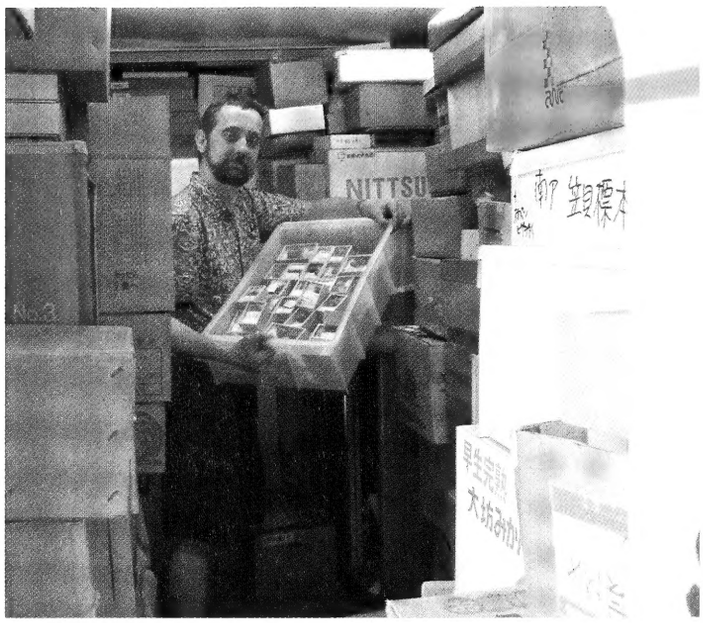
With an estimated 10,000 species, the Philippines form a major center of global marine molluscan diversity. Completing a guide to Philippine fauna will bring us closer to a longer-term goal of assembling a global database of the roughly 50,000 known marine mollusk species. The Academy is already the world leader for online information about mollusks, which is one reason we were asked to join the partnership.

Other consortium members bring an array of talents. Dr. Baldomero "Toto" Olivera at the University of Utah, studies extracts from cone shell venoms, one of which is already approved by the FDA for treating chronic pain. Dr. Margo Haygood at Oregon Health Sciences University heads a group investigating bacterial symbionts in mollusks, looking especially for potential anti-cancer compounds. Dr. Daniel Distel of Ocean Genome Legacy in Connecticut, seeks cellulose-digesting enzymes in shipworms (a kind of clam that bores into wood) that might be used for biofuels production. Professor Giselle Concepcion and her students at the University of the Philippines in Manila will participate in all phases of the project.

Donated collections

Much of the new material in the Academy's collections each year comes from field collecting by its own scientists and as voucher material from studies by others, but a considerable part of it is donated to the institution. In recent years donations have included the vast private collection of Dr. Meyer Naide of Philadelphia, and the priceless land and freshwater mollusks of Jens and Christa Hemmen in Germany. In 2004, with the generous assistance of Academy trustee I. Wistar Morris III, the department acquired the mollusk collection of the late Mr. Hideo Katori of Kobe, Japan. This huge and scientifically important body of material is the largest ever to leave Japan, and its addition to the Academy's already impressive holdings means that it now boasts possibly the world's finest Japanese mollusk collection.

Academy staff traveled to Kobe in early 2005 to survey and pack the collection in collaboration with the nearby Nishinomiya Shell Museum. In all, some 96 cases of specimens, weighing 1.2 tons, were shipped to Philadelphia in early 2003 and the work of cataloging began. Mr Katori collected many unique treasures during his fifty years in the field, and literally hundreds of rare species have been added to the Academy's catalog. A team



Above: Paul Callomon amongst the boxes of shells that made up the Katori collection in its storehouse in Japan.
Below: The Katori collection featured many parasite-host assemblies, such as these male-female eulimid pairs on a black urchin.

of bilingual staff and volunteers, both in Philadelphia and Japan, has removed the language barrier by translating thousands of labels. Their data are now accessible to the world via the Internet, potentially shedding new light on patterns of evolution among land snails in the mountains and forests of Japan.

Wistar Morris's assistance and ongoing support have been pivotal to this project, which is a perfect example of the huge benefits that science can gain from the involvement of partners in all walks of life.

Imaging the type specimens

Whenever a new species is described, a type specimen is designated by the author and placed in a museum collection. When subsequent workers deal with that species, citing it as being present in a new locality, for example, or finding that it has been introduced to another part of the world, they should check the type specimen to make sure their material really belongs to that species. This is most easily done via an image, rather than borrowing the specimen itself or traveling to see it. The department provides dozens of such images each year, and maintains copies as digital files.

Rather than just responding to individual requests, however, the department plans to create a set of images of each of the Academy's thousands of type specimens and to include these in the department's database, which can be searched online. Scientists everywhere will then be able to confirm the identity of their specimens by comparing them directly with the types. Images of other specimens will then be added, with priority given to rare species and examples from remote or lost habitats. The stored images can also be copied for use in publications, and their permanent availability will reduce the need to handle often fragile or tiny specimens.

Volunteers

No account of the department's activities would be complete without full acknowledgement of the vital role played by volunteers. Some of the Academy's pivotal early workers were unpaid, and volunteers continue to account for a substantial part of every department's daily productivity. Many of the Department of Malacology's volunteers were recruited through the Philadelphia Shell Club, but others simply presented themselves as willing to work. The current roster features veterans (and long-time COA members) Betty and Nick Ruggeri, along with Jane Heintz, and Happy Robertson, all of whom work on the curation of the dry collections; Alex Moede and Carl Keiser, who are sorting out the Hemmen Collection, and Miki Inagaki Radack, who works with Paul Callomon on the curation and databasing of the Katori material.

For serious "shell people," working as a volunteer in a major museum collection can be a rewarding experience, allowing them to attain, at least for a day or two each week, that elusive state of immersion in shells.

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FACTS AND FIGURES ABOUT THE ACADEMY'S MOLLUSK COLLECTION

World ranking	Second largest in the USA; fourth largest in the World
Number of dry specimens	8 to 11 million
Gross weight of collection	55 tons
Number of dry lots	Approximately 500,000
Number of alcohol lots	Approximately 35,000
Largest specimen	Walter the Octopus, with a roughly six-foot arm span
Smallest specimens	Several land snail species that are less than 1 millimeter long as adults
Largest shell	Clamzilla (*Tridacna gigas*) at 29 ½ inches and 75 lbs

Book Review: The Genus *Conus* (Mollusca: Neogastropoda) in the Plio-Pleistocene of the Southeastern United States by Jonathan Hendricks

Bulletins of American Paleontology, no. 375, Jan. 2009, $60

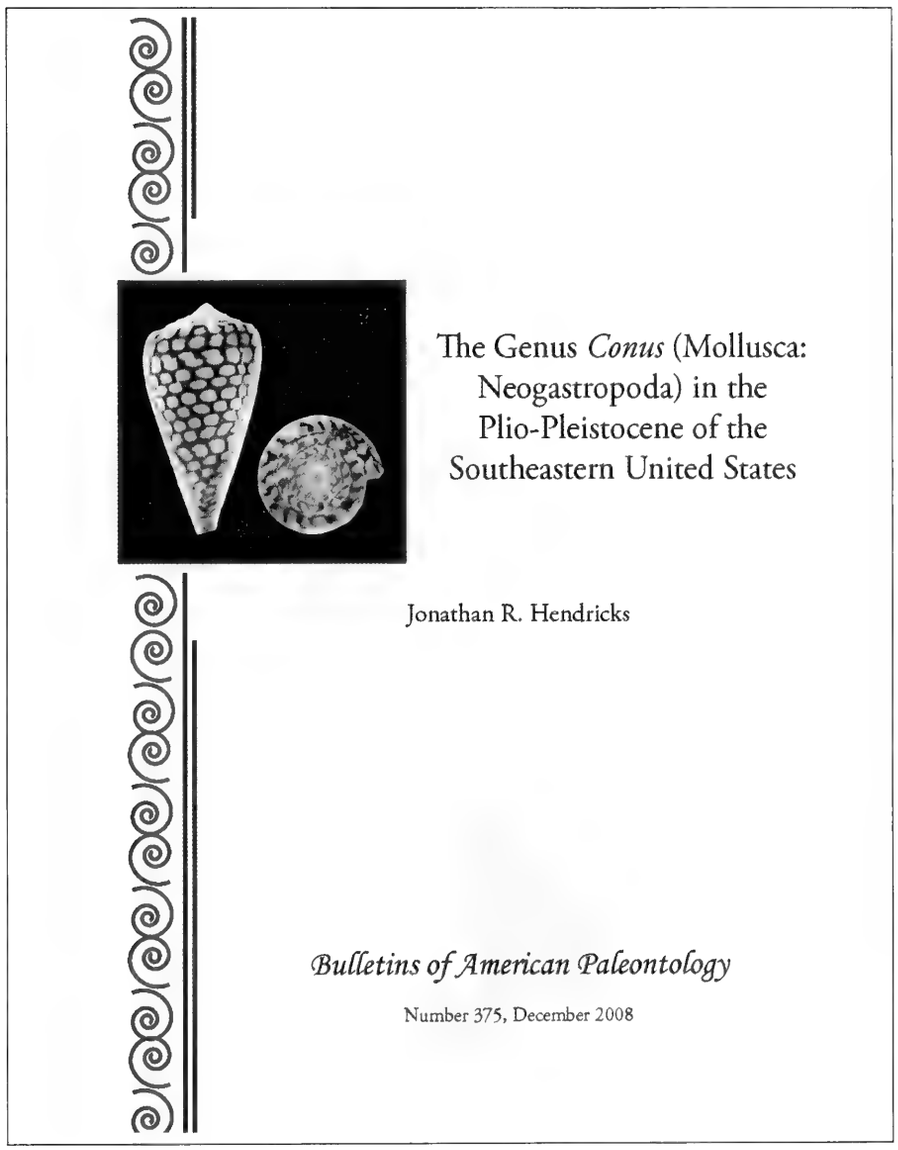
In 1968, Axel Olsson wrote, concerning the geology of southern Florida, that the molluscan faunas of the local units in his conservative estimates were as follows:

Unit	Conidae	Total fauna
Unit A (=Bermont)	5 species (all Recent)	500-600 species
Caloosahatchee	5 species (2 Recent)	No estimate
Pinecrest beds	18 species (2 Recent, mostly undescribed)	1200 species

Some forty years later Olsson's prophetic understanding of the Florida fossil Conidae has come to fruition with the publication of Jonathan Hendricks' fine monograph of the Genus *Conus* in the Plio-Pleistocene of the Southeastern United States. Hendricks uses vigorous statistical analyses of populations to define the taxa he recognizes as valid. He documents 84 different names proposed or applied to *Conus* in the literature of the Atlantic and Gulf Coastal Plains, Virginia to Florida, and Louisiana. Population studies allow Hendricks to reduce this to 19 well-founded species, a single new species, and three unique holotypes that need additional material before definitive conclusions can be rendered.

The well-known *Conus druidi* Olsson, 1967 is shown to be conformable with *C. haytensis* G. B. Sowerby II, 1850, and *Conus waccamawensis* Smith, 1930 proves to be conspecific with *C. oniscus* Woodring, 1928. *C. apium* Woodring, 1928 and *C. testudinarius leonensis* Mansfield, 1930 are shown to be conformable with the fossil and recent Eastern Pacific *C. patricius* Hinds, 1843. All the strange variations in our sinistral Pliocene cones are shown to be part of a single, highly variable species, *Conus (Contraconus) adversarius* Conrad, 1840.

On page 15, Table 3, Hendricks summarizes the stratigraphic distribution of the species he considers to be valid: Bermont six species, Caloosahatchee nine species, and Pinecrest with seventeen species. Axel Olsson is smiling.



References:

Hendricks, Jonathan R. 2009 (2008). The genus *Conus* (Mollusca: Neogastropoda) in the Plio-Pleistocene of the southeastern United States. Bulletins of American Paleontology, no. 375: 178 pp., 20 pls.

Olsson, A. A. 1968. A review of late Cenozoic stratigraphy of southern Florida. In: Late Cenozoic Stratigraphy of Southern Florida—a Reappraisal. Second Annual Field Trip of the Miami geological Society, February 1968. Compiled by Ronald D. Perkins. pp. 66-82.

Lyle Campbell, Division of Natural Science and Engineering, USC Upstate, Spartanburg, SC 29303
lcampbell@uscupstate.edu

Front Row: Wendy Enright Storms, Rosa Campay-Bertsch, Ángel Valdés, Hans Bertsch.

Middle Row: Crystal Johnson, Carla Stout, Laney Whitlow, Lou Ella Saul, Christine Fernandez, Elysse Gatdula,, Kathy Kalohi, Carole Hertz, Jim McLean, Yuliana Bedolla.

Back Row: Bill Huber, Kelvin Barwick, Lindsey Groves, Bob Stanton, Doug Eernisse, Pat LaFollette, Mike Vendrasco, Chuck Powell II, George Kennedy, Jules Hertz, Rick Nye, Bob Moore, Shawn Wiedrick.

Present at SCUM XIII but not in photo: Mary Jane Adams, Don Cadien, Luis Gonzalez, Leah Kosareff, Phil Liff-Grieff, Lucila Reccia, Deb Roman, Lily Sam. Image by author.

SCUM XIII: Southern California Unified Malacologists

by Lindsey T. Groves

Thirty-five professional, amateur, and student malacologists and paleontologists attended the 13th annual gathering of **S**outhern **C**alifornia **U**nified **M**alacologists (SCUM) in the Centarus Room of the Bronco Student Center at California State Polytechnic University, Pomona, California, on Saturday, January 24th, 2009. This informal group continues to meet on an annual basis to facilitate contact and keep members informed of research activities and opportunities. In keeping these gatherings informal, there are no dues, officers, or publications. It is hoped that the continuing success of informal groups such as SCUM, Bay Area Malacologists (BAM), Mid-Atlantic Malacologists (MAM), and the Ohio Valley Unified Malacologists (OVUM) will encourage other regional groups of malacologists and paleontologists to meet in a likewise manner.

SCUM XIII was hosted by Ángel Valdés who welcomed the group and updated everyone on recent happenings. In traditional SCUM fashion all attendees introduced themselves and were given the opportunity to present current mollusk related research and activities. It was particularly refreshing to see numerous undergraduate and graduate students from California State University, Fullerton, and California Polytechnic University, Pomona, participating this year. Most presentations were informal but several were quite detailed. Of particular interest were presentations by two of Ángel's grad students, Carla Stout and Elysse Gatdula, on nudibranch phylogenetics. Another interesting and very practical presentation was by Pat LaFollette on the availability of Malacological literature on the Internet. As always, in addition to his busy teaching schedule, Doug Eernisse (Calif. St. Univ., Fullerton) updated everyone on his extensive research projects with his colleagues and grad students. Numerous discussions and comments resulted from these presentations. Current Western Society of Malacologists President, Mike Vendrasco, updated the group about the annual WSM meeting to be held June 23rd through 27th at California State University, Fullerton. SCUM XIV will be hosted by Wendy Enright Storms at the City of San Diego, Marine Biology Lab, San Diego, in January of 2010.

SCUM XIII participants and their respective interests and/or activities:

Mary Jane Adams (Arcadia, CA): Accomplished diver and underwater photographer, instrumental in photo documenting vertebrate and invertebrate faunas of the Phoenix Islands, Kiribati, as the area was granted protected status in 2008.

Kelvin Barwick (Orange Co. Sanitation Dist., CA): Researches mollusk and polychaete faunas of the Southern California Bight and is training the OCSD staff in his invertebrate identification techniques.

Yuliana Bedolla (Universidad Autónoma de Baja California, Ensenada, Mexico): Currently visiting the invertebrate collections at the Nat. Hist. Mus. L.A. Co. doing thesis research on the invertebrate faunas of the offshore islands of Baja California, Mexico.

Hans Bertsch (San Diego, CA): Population studies of the nudibranch faunas of Bahía de los Angeles, Golfo de California, Baja California, Mexico. He is also comparing nudibranch species numbers and distributions from recently published books and studying the differences.

Don Cadien (L.A. Co. Sanitation Dist., CA): Currently researching environmental biology of mollusks (especially aplacophorans and the genus *Philine*) and crustaceans from bathyal and abyssal localities off southern California.

Rosa Campay-Bertsch (San Diego, CA): Wife of SCUM co-founder Hans Bertsch, no report.

Doug Eernisse (Calif. St. Univ. Fullerton, CA): Teaching duties plus a myriad of research projects with professional and grad student colleagues including: phylogeny of Mopaliidae (chitons), molluscan eyes, chiton hemocyanin, chiton fossils, compiling a chiton database, phylogeny of *Henricia* Seastars, and seamount chitons.

Wendy Enright Storms (City of San Diego, CA): Compiles environmental inventory and identifications of deep-water invertebrate faunas of the Southern California Bight.

Christine Fernandez (So. Calif. Assoc. of Govts.): Environmental planner with an interest in chitons and their systematics.

Elysse Gatdula (Calif. Poly. Univ., Pomona, CA): Grad student studying molecular characteristics of the nudibranch genus *Chelidonura* to determine whether there is considerable variability among eastern Pacific species or a single species.

Luis Gonzalez (Calif. Poly. Univ., Pomona, CA): Biology student at Cal. Poly., no report.

Lindsey Groves (Nat. Hist. Mus L.A. Co., CA): Fossil cowry research plus compilation for the companion volume to Keen & Bentson's (1944) *Check List of California Tertiary Marine Mollusca*.

Carole Hertz (San Diego Shell Club): Current editor of *The Festivus* the publication of the SDSC, and president of the SDSC.

Jules Hertz (San Diego Shell Club): Business editor of *The Festivus*.

Bill Huber (Cal. Poly. Univ., Pomona, CA): Spouse of Deborah Roman with an interest in botany.

Crystal Johnson (Calif. St. Univ., Fullerton, CA): Biology grad student at CSU Fullerton, no report.

Kathy Kalohi (Pacific Conchological Club): Current treasurer of the PCC and amateur shell collector and SCUBA enthusiast.

George Kennedy (Brian F. Smith & Assoc., Poway, CA): SCUM co-founder. Research of Pleistocene marine terraces of California and molluscan faunas of the Pliocene San Diego Formation. Western Society of Malacologists Vice-President and will hold the 2010 meeting in the San Diego area.

Leah Kosareff (Calif. St. Univ., Fullerton, CA): Biology student at CSU Fullerton, no report.

Pat LaFollette (Nat. Hist. Mus. L.A. Co., CA): A research associate at LACM and currently reviewing and rearranging the Pyramidellidae in the malacology collection and doing consulting paleontology for a local company. Assisting Jim McLean with imaging for a worldwide Colloniinae project. Interested in the availability of molluscan literature on the Internet.

Phil Liff-Grief (Pacific Conchological Club): Editor of *Las Conchas* (publication of the Pacific Conchological Club) and land snail collector. Collector of chitons, terrestrial mollusks, and fossil mollusks. Collaborating with Chuck Powell (USGS) on Pleistocene species at Rincon Hill, Ventura/Santa Barbara counties.

Jim McLean (Nat. Hist. Mus. L.A. Co., CA): Continues research of worldwide Liotiidae and work on his eagerly anticipated volumes on North Pacific shelled gastropods. Examples of his text and plates were presented for viewing.

Bob Moore (Pacific Conchological Club): Former high school biology teacher now a shell collector with an interest in marine species of southern California. Volunteer in the Malacology section at the Nat. Hist. Mus. L.A. Co.

Rick Nye (Calif. St. Univ., Fullerton, CA): Biology student at CSU Fullerton, no report.

Chuck Powell II (U.S. Geological Survey): Research of Neogene and Quaternary mollusks of California, especially their biostragraphy and the correlation and chronologies of faunas offset by the San Andreas Fault.

Lucila Reccia (Cal. Poly. Univ., Pomona, CA): Biology student at Cal. Poly., no report.

Deb Roman (Calif. St. Univ., Northridge, CA): Graduate research on chiton remains found in aboriginal middens of Baja California, Mexico.

Lily Sam (Calif. St. Univ., Fullerton, CA): Biology student at CSU Fullerton, no report.

LouElla Saul (Nat. Hist. Mus. L.A. Co., CA): Res. Assoc. working on Cretaceous mollusks with Richard Squires (Calif. St. Univ. Northridge), particularly on the fossil aporrhaid genus *Tessarolax*.

Bob Stanton (Nat. Hist. Mus. L.A. Co., CA): Research on the Miocene faunas of the Santa Monica Mountains with John Alderson, especially the relationship between faunas of the Conejo Volcanics and the Topanga Formation.

Carla Stout (Victor Valley Comm. Coll., Victorville, CA): Recent graduate from Cal. Poly. Pomona, teaching Biology at Victor Valley Community College and plans to return to do doctoral work.

Ángel Valdés (Calif. Poly. Univ., Pomona, CA): Teaches Evolutionary Biology and continues phylogenetic research on opisthobranch gastropods of the Caribbean and Panamic provinces. Coauthored new book on Indo-Pacific nudibranchs with Terry Gosliner and David Behrens.

Mike Vendrasco (Calif. St. Univ., Fullerton, CA): Research on fossil (especially from the Pliocene San Diego Formation) and Recent chitons whilst teaching part-time at CSU Fullerton.

Laney Whitlow (Calif. St. Univ., Fullerton, CA): Biology student at CSU Fullerton, no report.

Shawn Wiedrick (Pacific Conchological Club): President of the PCC and interested in all areas of shell collecting. Volunteer at the Nat. Hist. Mus. of L.A. Co., works identifying micro-turrids of the Indo-Pacific.

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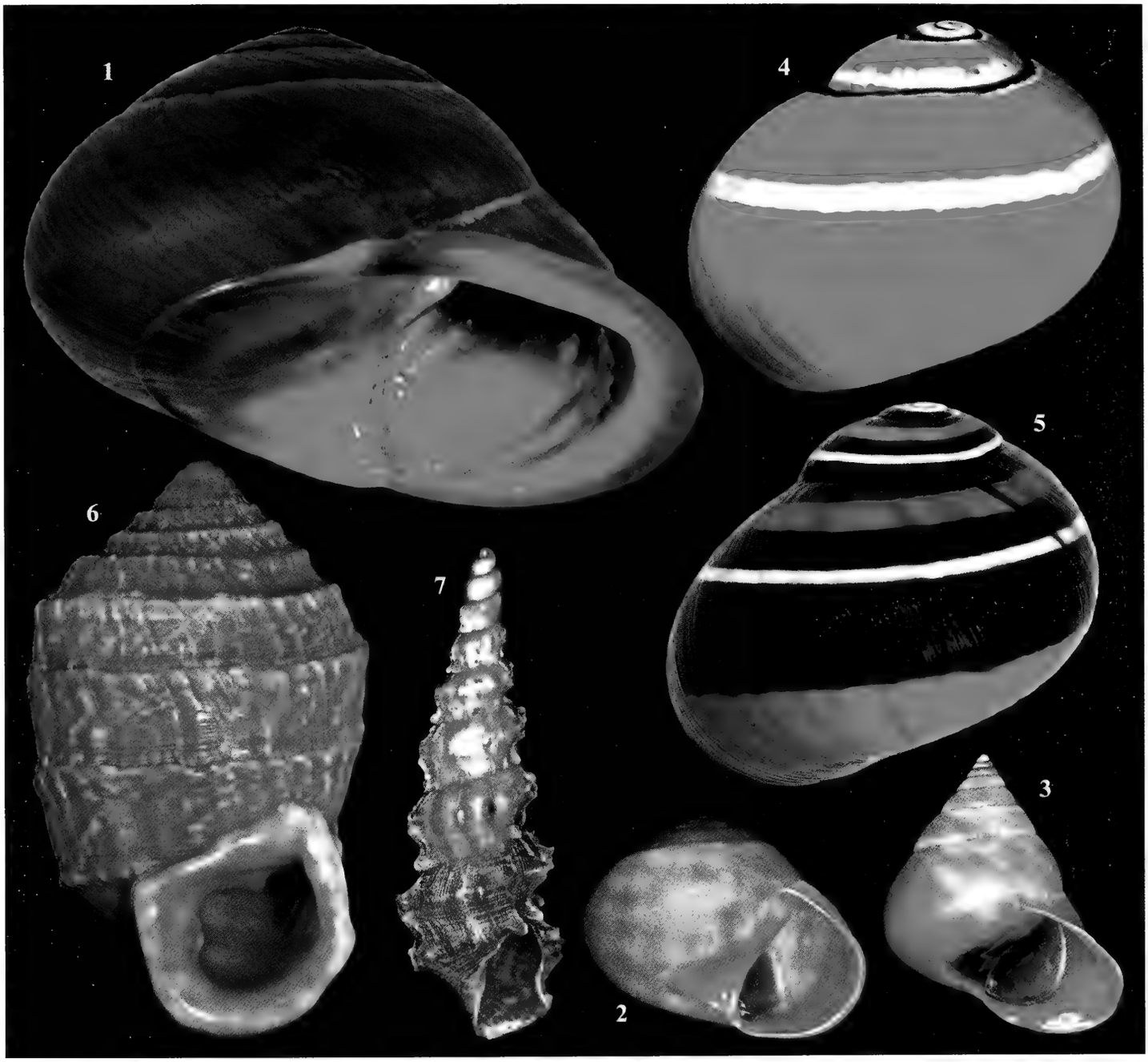
Cuban Landsnails: the Weird and the Wonderful

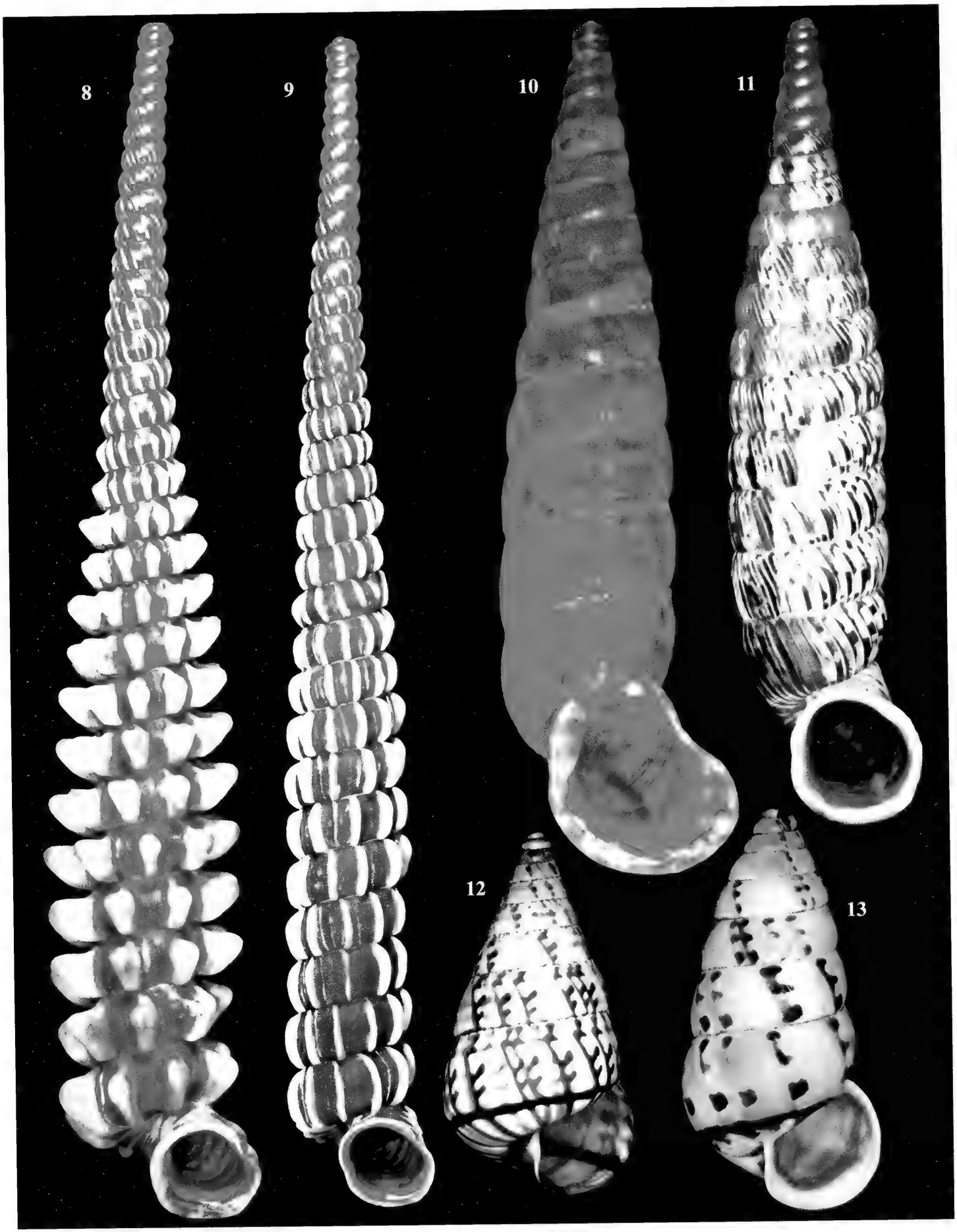
By Simon Aiken

Cuba's lush landscape is home to over 1400 species of landsnails, of which about 96% are endemic. Nowhere else on earth can boast such a concentration of species. The images shown here are just a tiny representation of the bewildering variety of landsnails from this collectors' paradise – the colorful, the bizarrely shaped, and the intricately sculptured. Some of the rather small snails are illustrated here in more detail than in the commonly available literature.



HELICINIDAE: 1. *Emoda sagraiana percrassa* Aguayo & Jaume, 1954 (Pinar del Río, 29.3 mm). 2. *Alcadia rotunda* (d'Orbigny, 1842) (Pinar del Río, 7.5 mm). 3. *Troschelviana jugulata* (Poey, 1858) (Pinar del Río, 14.0 mm). HELMINTHOGLYPTIDAE: 4,5. *Polymita picta* Born, 1778 (Guantánamo, 23.5 mm, 24.4 mm). CERIONIDAE: 6. *Cerion geophilus* Clench & Aguayo, 1949 (Holguín, 29.5 mm). OLEACINIDAE: 7. *Melaniella acuticostata* (d'Orbigny, 1842) (La Habana, 11.5 mm).

All photographs in this article appear courtesy of Simon's Specimen Shells Ltd (www.simons-specimen-shells.com). Photographs in the earlier article "A Cuban Land Shell Trip in Pictures" (American Conchologist, December 2008, pages 24–27, and front/back covers) were by Adrián González Guillén, Oscar Pentón, and Simon Aiken and appeared courtesy of Simon's Specimen Shells Ltd. Adrián González Guillén is currently researching a new book on the genus *Polymita*.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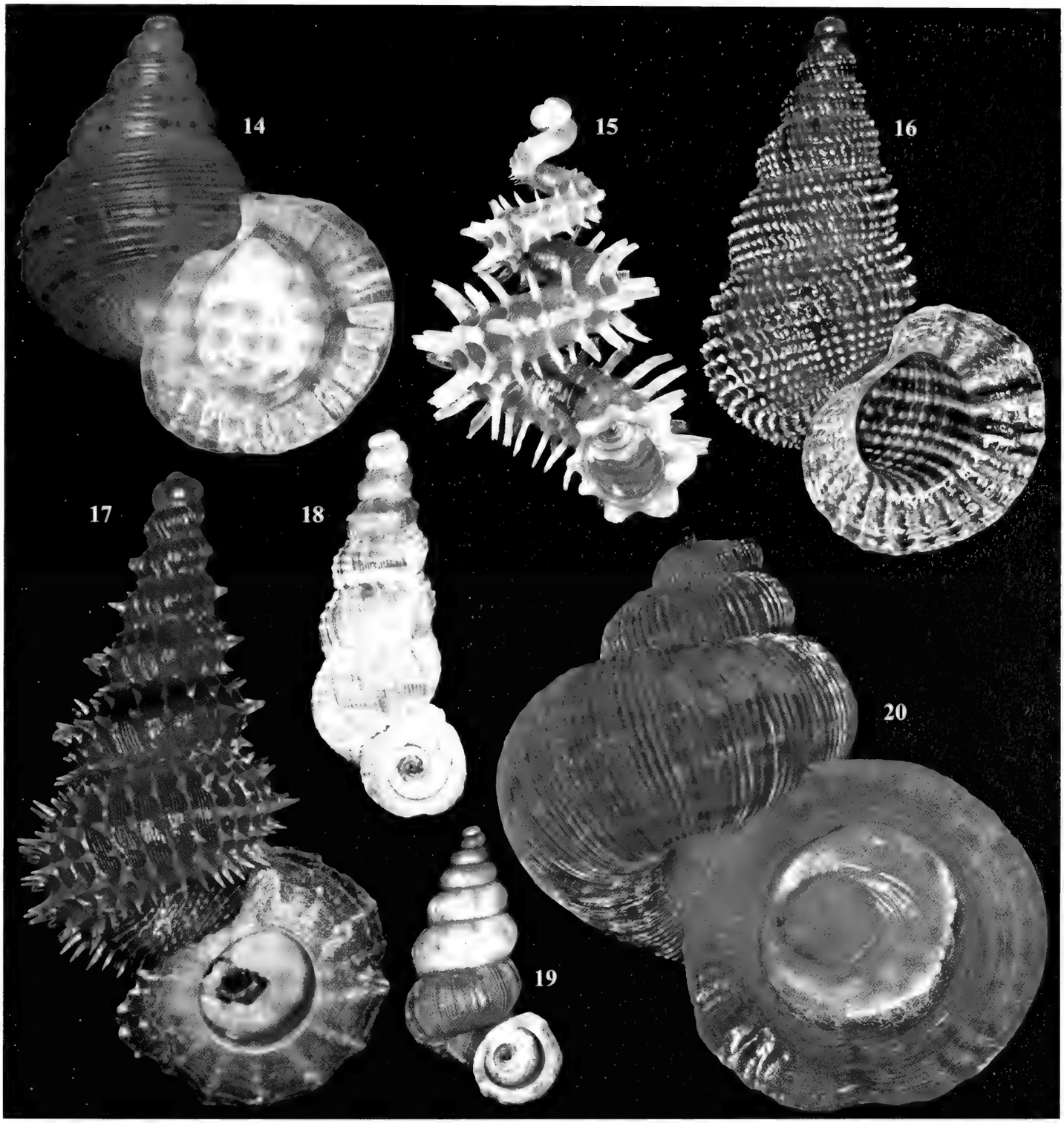


UROCOPTIDAE: 8. ***Gonglyostoma ellioti*** **(Poey, 1857) (Pinar del Río, 25.0 mm). 9.** ***Gonglyostoma lowei*** **de la Torre, 1927 (Pinar del Río, 24.2 mm). 10.** ***Tomelasmus irroratus*** **(Gundlach, 1856) (Pinar del Río, 23.3 mm). 11.** ***Nodulia handi*** **(de la Torre, 1927) (Pinar del Río, 22.0 mm). 12.** ***Macroceramus pictus*** **Gundlach in Pfeiffer, 1860 (Camagüey, 13.0 mm). 13.** ***Macroceramus clerchi*** **Arango in Pfeiffer, 1866 (Guantánamo, 14.1 mm). ANNULARIIDAE: 14.** ***Eutudora jimenoi*** **(Arango in Pfeiffer, 1864) (La Habana, 16.9 mm). 15.** ***Blaesospira echinus infernalis*** **(de la Torre & Bartsch, 1941) (Pinar del Río, 9.0 mm). 16.** ***Chondropoma presasianum*** **Gundlach in Pfeffier, 1863 (Matanzas, 18.9 mm). 17.** ***Xenopoma spinosissimum*** **de la Torre & Bartsch, 1941 (Holguín, 13.1 mm). 18.** ***Ramsdenia nobilitata*** **(de la Torre & Bartsch, 1941) (Matanzas, 9.4 mm). 19.** ***Wrightudora semicoronata*** **(Gundlach, 1860) (Guantánamo, 10.3 mm). 20.** ***Chondropometes magnum elisabethae*** **de la Torre & Bartsch, 1938 (Pinar del Río, 23.7 mm).**

The Philadelphia Shell Show - 10-11 October 2009

Paul Callomon

The Philadelphia Shell Club was founded on September 22nd, 1955, and by the following March already had a membership of over 100. Founding President R. Tucker Abbott drew up the club's charter with the stated objective of "...the promotion of Malacology and the hobby of shell collecting." Field trips and special events augmented the regular monthly meetings, which featured talks by many of the leading figures in the science. With its fiftieth anniversary celebrated in 2005, the club continues to meet at the Academy on the third Thursday of every month, except July and August. Meetings feature talks by local and visiting experts on various aspects of shell collecting and the science of Malacology, together with dealers' tables and occasional silent auctions. The club's other regular activities include an annual auction, field trips, and a summer picnic. New members are always most welcome.

The Club's first shell shows were informal affairs for its members and started in 1962. The growing success of these shows encouraged the club to stage its first public show in 1983, and this soon became an annual event. The Philadelphia Shell Show is now one of the largest in the USA, and is firmly established as a mainstay of the national circuit. This weekend-long event is nowadays held at the Academy of Natural Sciences and features exhibits in judged categories that reflect various aspects of shell collecting, from the scientific to the purely artistic. There is a large bourse, where dealers from all over the world set out displays of specimen shells, artwork, jewelry, and books. Children can pick treasures out of the Free Shells for Kids pails, and representatives of the club are on hand to answer questions. On Saturday evening the club presents a free talk, followed by a ticket-only supper and awards ceremony at the Academy, to which all are welcome. Academy scientists give guided tours of the institution's vast shell collection on both days of the show.

The 2008 show was the largest yet, and featured, for the first time, a ticket-only Preview Party on Friday evening. This was a successful fundraiser for the Academy and specifically for the Department of Malacology, and over two hundred invited guests helped raise around $40,000.

The 2009 show will be held on Columbus Day weekend, October 10th and 11th, with the Preview Party once again on Friday evening. The new show rules and application forms will be published in February. There will be no major departures from the 2008 rules, however, which can still be found at the club's web site, www.phillyshellclub.org, and all times will be the same.

This year's show will feature all the improvements made in recent years, including all-day setup on Friday and the very affordable supper on Saturday. New show features for 2009 include a trophy for Shell of the Show and the first Conrad Award for the best paleontological exhibit.

Our keynote speaker on Saturday will be Professor Geerat "Gary" Vermeij of the University of California, one of the world's leading evolutionary scientists and a highly accomplished malacologist and paleontologist. The Academy will augment the show with a full program of shell-related events and activities for young and old throughout the weekend, so bring the family! In 2008 these events included games, crafts, squid dissections, specimen quizzes, and live theater shows in the Academy's auditorium.

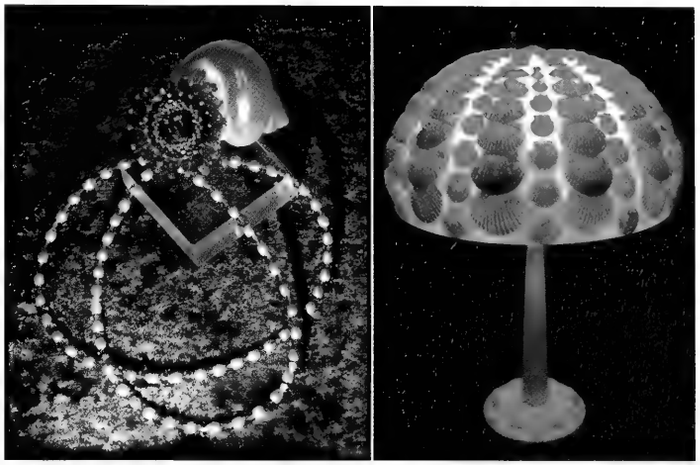
The venerable Academy of Natural Sciences, home of American molluscan studies since 1812!

Scientific exhibits

Many *American Conchologist* readers of a certain age would place the Golden Age of exhibit building in the 1970s and 1980s, an era epitomized by the work of Neil Hepler. The 2008 Philadelphia show actually featured one of his mammoth creations, a 35-foot piece on the genus *Nautilus* that is now housed at the Delaware Museum of Natural History. Though it drew admiring remarks nearly forty years after its creation, the fact is that despite all the distractions of our modern age our show attracts equally strong entries in the scientific categories today. Modern technology has simplified many of the tasks involved in exhibit building, such as label writing and color printing, but the underlying organization and scholarship are what garner the plaques and trophies. We hear rumors of a decline in the size and number of scientific exhibits, but the evidence each year at Philadelphia is that the field remains healthy. Veteran observers confirm that the quality of presentation and particularly of the specimens themselves is higher than ever before. As much as anything else, however, a shell show is also a special social event that brings together people with a common interest. The competition is serious but friendly, and exhibitors learn a great deal from each other's work.

As show organizer, I hope that the pictures here and the many accounts posted on the Internet will encourage everyone who can to make the trip to Philly in October and take part in the show as an exhibitor or visitor. It is a social highlight for the whole shelling community and every year brings new faces. I look forward to seeing you all in October!

Scientific exhibits are the core of the show and always amaze and educate visitors. Here is an impressive display of chank shells, family Turbinellidae.



The artistic classes go from strength to strength too, with strong showings both in depictive arts and shell crafts. Left is a beautiful shell necklace and right an impressive shell lamp.

The bourse is always busy! Nine dealers from all over the world put out their best stuff in the first show of the winter season.

The Academy puts on shell-themed shows, talks, and demonstrations all weekend. There's something for the whole family!

Here some future scientists (or what some might call not-easily-grossed-out kids) try their hand at dissecting squids with Academy staff.

The club supper on Saturday evening is always well attended and takes place in the Academy's famous Dinosaur Hall. Many familiar COA faces! Several COA – dinosaur jokes come to mind, that will be left unsaid.

Tiny Jewels: An introduction to pupillid taxonomy, ecology, and collection

Jeff Nekola

Introduction

Across most of North America roughly 50% of all land snail species and almost 90% of all individuals are less than 5mm in maximum dimension, or approximately the size of Lincoln's chin on a penny (Fig. 1). Of these, the Pupillidae make an especially important contribution to biodiversity. This family (here used in the expansive, historical sense as outlined by H.A. Pilsbry) includes the genera *Bothriopupa, Chaenaxis, Columella, Gastrocopta, Pupilla, Pupisoma, Sterkia,* and *Vertigo*, and encompasses almost 10% of the entire USA and Canadian fauna (~125 species), with an unknown number of additional taxa residing in Mexico. North America represents the global biodiversity center for *Chaenaxis, Gastrocopta, Pupilla,* and *Vertigo*, harboring at least 2/3 of all known global taxa and all known morphological groups. The Pupillidae are the third most diverse family east of the continental divide (12% of the total fauna), exceeded only by the Polygyridae (30%) and Zonitidae (22%). Pupillids alone make up approximately one-third of both total species diversity and number of individuals for site-scale faunas throughout North America, with this level approaching 80% - 100% within the northern taiga and tundra, acidic wetlands and savannas of the southeastern coastal plain, and fog-belt chaparral of the California coast. In some places, such as the pocosins of the North Carolina coastal plain, the number of pupillid land snails can exceed 5,000 individuals per square meter.

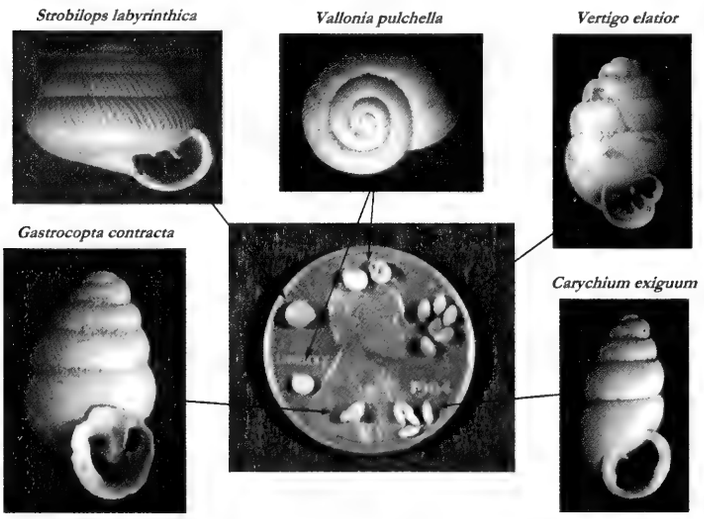


Figure 1: Representative micro-snails from a northeastern Wisconsin wet meadow.

Yet, in spite of their ecological importance, pupillids and other microsnails have been almost completely ignored by collectors. For instance, in Abbott's "*Compendium of Landshells*" only a few dozen microsnail species are included out of the roughly 2000 illustrated, with only 11 of these being pupillids. The large shells which dominate this book in actuality represent less than 2% of all individuals across not only North America, but also New Zealand, eastern Australia, western Africa, and southeast Asia as well.

Adequate documentation of land snail diversity thus requires investigators to efficiently collect and accurately identify pupillids. Unfortunately, neither has been common. Two major reasons for this exist. First, as none of the taxa exceeds 6mm in maximum dimension, accurate identification requires critical examination at 20-40x magnification. This has made even laboratory identifications suspect, with there being a high incidence of misidentification and mixed lots in museum collections. For instance, I recently found that over 90% of the *Vertigo* collections in the National Museum of Canada were incorrectly identified. Second, most species are cryptic, being found primarily in decomposed leaf litter. As a consequence they tend to be undersampled by those relying on locating individuals by eye. This has led to the lack of documentation of not only the normal range of morphological variation within and between populations and taxa but also the true geographic and ecological ranges for most species. As a result, hasty conclusions concerning specific identity, biogeography, and ecology in this family has been unfortunately commonplace.

Over the last decade, colleague Brian Coles of the Welsh National Museum and I have observed pupillid communities across most of North America, ranging from central Quebec, Hudson's Bay and the Alaskan north slope to Florida, Texas, the desert southwest, and coastal California. In this time, we have collected from over 1,700 stations, including almost 75% of North American pupillid taxa and over 200,000 total individuals. In the process we have described two new species, with perhaps another 5-6 waiting in the wings. This experience provides a unique perspective with which to introduce this important group of mollusks to the shell collecting community.

Important Concological Features for Shell Identification

Identification of pupillid shells requires careful observation and comparison of approximately two-dozen shell characteristics. While a number of these are also commonly used in identification of taxa from other families, use of some is almost completely limited to pupillids. The more important of these features are:

Apex: the uppermost 2-3 whorls of the shell
Body Whorl: the final full whorl in an adult shell
Callus: calcified thickening of the palatal wall of the aperture, often deposited between lamellae

Crest: a bowing out of the shell immediately in back of the aperture as seen in side view
Palatal Depression: indentation of the shell surface at the location of the palatal lamellae
Penultimate Whorl: the next to the last whorl in an adult shell
Sinulus: indentation of the aperture margin along the palatal wall
Suture: indentation of the shell surface where two whorls meet

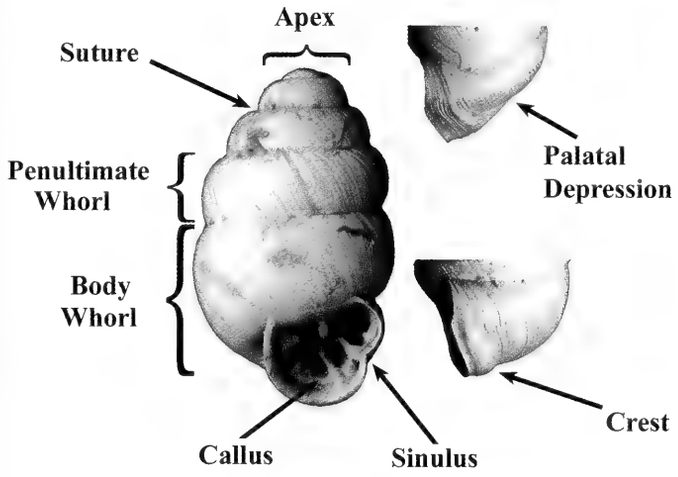


Figure 2: Major shell features used to identify pupillid taxa, illustrated through use of SEM images of *Vertigo elatior* (left), *V. bollesiana* (upper right) and *V. cristata* (lower right).

Overall shell shape is also often diagnostic, ranging from conical to ovoid to cylindrical. Also of considerable importance in pupillid taxonomy is the position and appearance of a variable number of shell thickenings often found in the shell aperture. While often colloquially referred to as 'teeth' this term is misleading as they are in no way related to the snail's gastrointestinal track. In fact, it remains unclear what function (if any) they serve. Because of their thin, plate-like appearance, it is best to refer to these as 'lamellae'. It should be noted, however, that H.A. Pilsbry made the terminology unnecessarily complex by referring to the palatal lamellae as 'lobes.' The up to seven or more lamellae in the shell aperture are designated by their position:

Angular: the plate on the parietal wall of the aperture to the right of the parietal lamella in dextral shells
Basal: the plate on the bottom left side (in dextral shells) of the aperture below the columellar lamella
Columellar: the plate on the columellar wall of the aperture
Infraparietal: the plate on the parietal wall to the left of the parietal lamella in dextral shells
Parietal: major plate in the middle of the parietal wall of the aperture
Lower Palatal: lowermost of the two major plates often found on the palatal wall
Upper Palatal: uppermost of the of the two major plates often found on the palatal wall

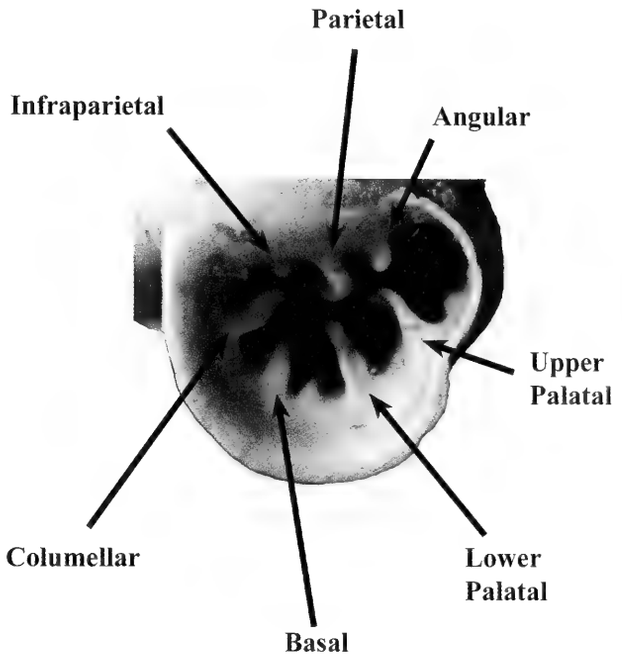


Figure 3: Location of the major apertural lamellae used in pupillid identification, illustrated through use of a *Vertigo ovata* SEM image.

In the genus *Gastrocopta*, the angular and parietal lamellae are fused into a single body, which is often referred to as an 'angulo-parietal lamella.' It is important to note that, depending upon the species, the strength of a given lamella, or the total number of lamellae, may vary between individuals both within and between populations. This level of variability can only be assessed when large numbers of shells are observed over a broad ecological and/or geographic range.

Species Concepts and Taxonomic Issues

Some believe that because their critical distinguishing features are often no larger than a tenth of a mm (or less) in size, they must be of no taxonomic merit. These researchers have tended to recommend the lumping of many taxa. On the other hand, others have felt that even the slightest differences must have taxonomic merit, and have advocated the elevation of many pupillid forms to species-level rank.

Until recently, there has been no objective way to assess these opposing viewpoints, as pupillids often demonstrate a high degree of aphallism and limited levels of anatomical variation. As a result, the level of taxonomic discourse often descended into name-calling and appeals to authority. Thanks to DNA sequencing, independent information can now be obtained. We recently completed an initial survey of DNA sequences from 25 pupillid taxa, focusing on the *Vertigo gouldii* group (Figure 4). While these analyses demonstrate that shell features should not be used to infer evolutionary relationships, they usually function well in assigning species-level differences. The beliefs of some of the most ardent lumpers can thus be shown to be false, with the former western '*V.*

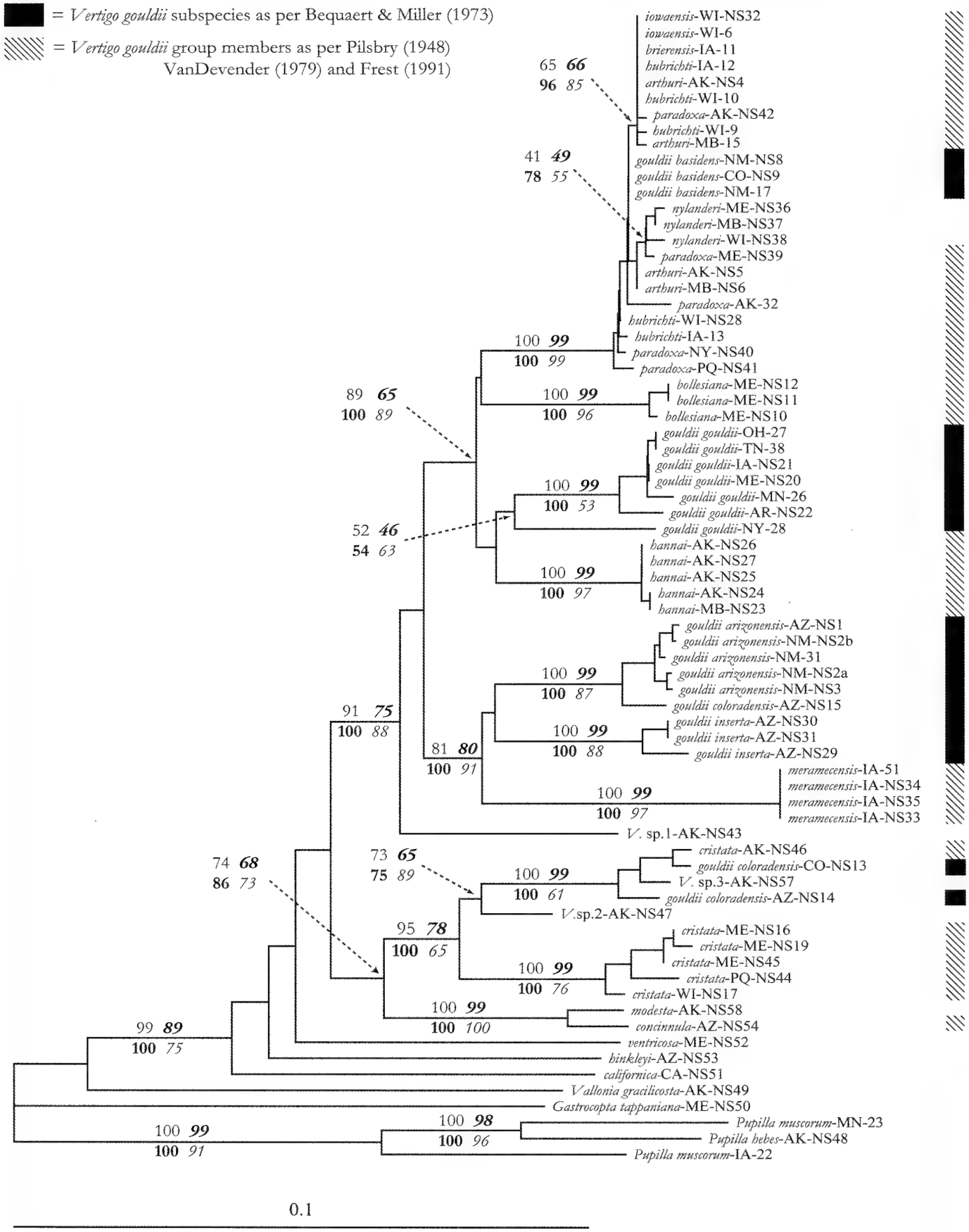


Figure 4: Phylogenetic tree of the *Vertigo gouldii* group and other various pupillids. Nodes with strong to moderate support based on four different analytical approaches have been provided to the left of each node.

gouldii' subspecies actually representing five highly distinct species-level taxa. Ardent splitters were also shown to be wrong, particularly in the case of the *Vertigo arthuri* clade which some had suggested to represent up to six species. This did not surprise us as we had already observed complete conchological intergradation between these forms across much of North America. These analyses also demonstrated that some species assumed to be shared between North America and Eurasia actually represent species complexes. In the case of *Pupilla muscorum* the distinct Eurasian lineages have escaped and become naturalized across eastern North America. These analyses also help us understand more about their origin. Assuming a 1% sequence divergence per million years, it appears that modern species originated during a rapid speciation event approximately 7 million years ago. This not only is approximately the same time that elephants and mastodons diverged, but also roughly the time that the major hominid groups differentiated. We and pupillids species appear to be of about the same age.

Biology, Ecology, and Biogeography

While most land snails are hermaphrodites, what sets the pupillids apart is the commonness by which single individuals fertilize their eggs with their own sperm. This allows pupillids (and many other microsnails) a great advantage in migration: the movement of only a single individual is required to found a new population. This greatly increases the likelihood of long-range migration. Potential vectors for these movements include not only birds and other large vertebrates, but also water and even wind, with it being possible for small taxa to be blown across the open ocean from one island to the next. Recent genetic evidence also demonstrates that small land snails have been able to migrate from Western Europe to Tristan da Cuna (isolated islands in the South Atlantic) and back, likely on migrating shore birds. Such long-range passive dispersal is aided by their adhesive mucus, which makes it easy for them to adhere to passing vertebrates. This can be easily demonstrated for pupillids by noting the individuals that commonly stick to a hand run through damp sedge or grass leaves.

As a result, North American pupillids are characterized not only by having large ranges, but also by almost completely saturating potential habitats within that range. Because of their small size, it is common for population densities to exceed hundreds, if not thousands of individuals per square meter. For this reason, most are not highly endangered, being found not only across large extents but also at large population sizes within many sites. For instance, even though it may only actively move a few meters within its lifetime, the 1.8mm *Vertigo arthuri* extends from Newfoundland to the Alaskan interior, south to New York, Iowa, the Black Hills, and northern New Mexico. Within this range it is not uncommon for it to be found in all potential habitats, such as in northwestern Minnesota where it occurs in aspen parkland or in the New England states where it is restricted to upland white cedar forest.

Another vital aspect to pupillid ecology is their high rates of small-scale sympatry. It is not uncommon to find a half-dozen species co-occurring at sub-meter scales! The highest co-existence levels appear to be with *Gastrocopta* in the southern Plains and

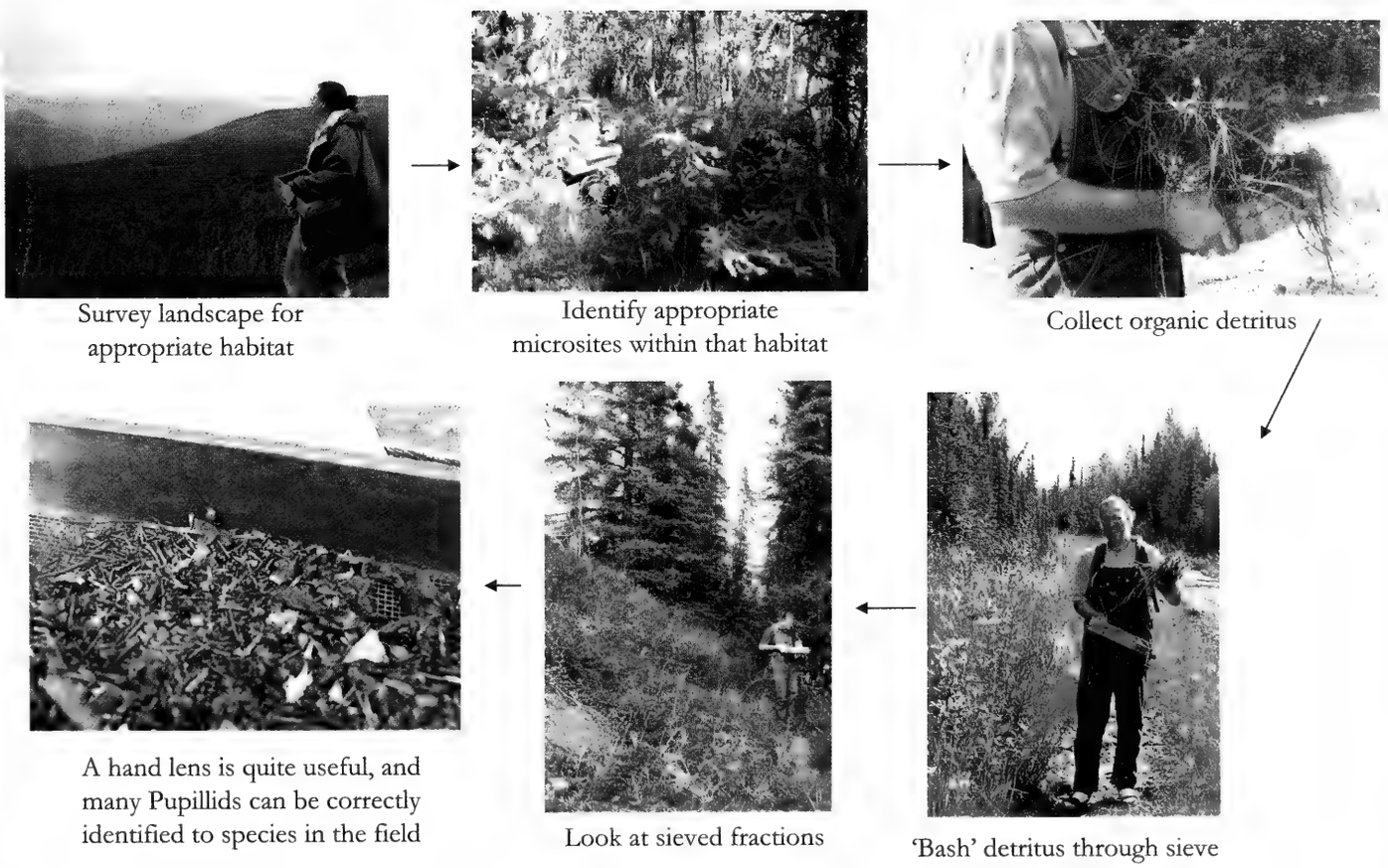


Figure 5: Standard field collection techniques for documenting pupillid biodiversity, using pictures taken during recent field work in the Alaskan interior.

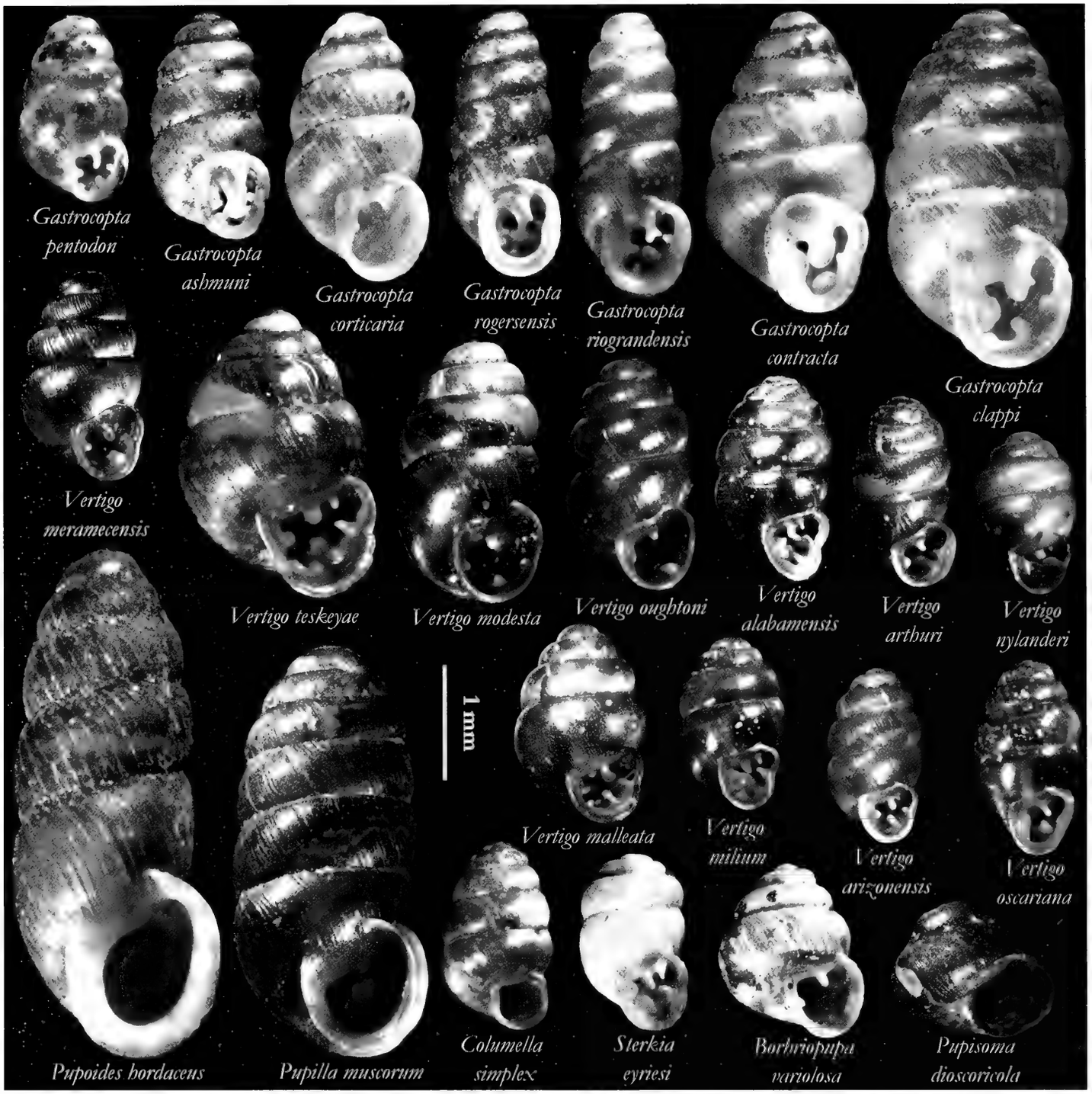


Figure 6. Collection information is as follows: ***Bothriopupa variolosa***, Cuba, CM 62.21311 (color has faded in long-term storage); ***Columella simplex*** Haywood Landing, Jones Co., North Carolina, 34°49'10"N, 77°11'2"W; ***Gastrocopta ashmuni***, Canyon del Agua, San Miguel Co., New Mexico, 35°29'45"N, 105°3'24"W; ***Gastrocopta clappi***, Cedars of Lebanon State Park, Wilson Co., Tennessee, 36°20'40"N, 92°6'25"W; ***Gastrocopta contracta***, Rowley Fen, Buchanan Co., Iowa, 42°22'26"N, 91°51'7"W; ***Gastrocopta corticaria***, Canton Glade, Jones Co., Iowa, 42°10'46"N, 90°59'52"W; ***Gastrocopta pentodon***, Lebanon State Forest, Burlington Co., New Jersey, 39°52'29"N, 74°30'58"W; ***Gastrocopta riograndensis***, Sacramento Canyon Falls, Otero Co., New Mexico, 32°42'51"N, 105°45'15"W; ***Gastrocopta rogersensis***, Beams Cabin, Jones Co., Iowa, 42°8'32"N, 91°20'44"W; ***Pupilla muscorum*** , Crawford Quarry, Linn Co., Iowa, 41°59'12"N, 91°44'24W; ***Pupisoma dioscoricola***, Wadboo Creek, Berkeley Co., South Carolina, 33°11'50"N, 79°56'46"W; ***Pupoides hordaceus***, Duran, Torrance Co., New Mexico, 34°26'56"N, 105°25'6"W; ***Sterkia eyriesi rhoadsi***, Kyk-over-All, Kartabo, British Guiana, CM 62.19700 (color has faded in long-term storage); ***Vertigo alabamensis***, Lanier Quarry, Pender Co., North Carolina, 34°37'49"N, 77°40'27"W; ***Vertigo arizonensis***, Devils Den Canyon, Eddy Co., New Mexico, 32°1'59"N, 104°48'17"W; ***Vertigo arthuri***, Devils Lake Wayside, Manitoba, 52°24'13"N, 98°54'43" W; ***Vertigo malleata***, Holly Shelter Game Lands, Pender Co., North Carolina, 34°31'57"N, 77°44'41"W (paratype); ***Vertigo meramecensis***, North Bear Creek, Winneshiek Co., Iowa, 43°26'52"N, 91°37'19"W; ***Vertigo milium***, Berlin Fen, Green Lake Co., Wisconsin, 43°57'47"N, 88°45'20"W; ***Vertigo modesta***, South Fork Koyukuk River, Alaska, 67°1'11"N, 150°17'19"W; ***Vertigo nylanderi***, Sturgeon Gill Road, Manitoba, 53°28'23"N, 99°9'55"W; ***Vertigo oscariana***, Wadboo Creek, Berkeley Co., South Carolina, 33°11'50"N, 79°56'46"W; ***Vertigo oughtoni***, West Twin Lake Fen, Churchill, Manitoba, 58°37'46"N, 93°50'35"W; ***Vertigo teskeyae***, Huffs Island Park, Lincoln Co., Arkansas.

Ozarks (up to eight species per site), and *Vertigo* in the upper Midwest (up to six) and the Alaskan interior (up to eight). In spite of this, there is little evidence for interbreeding based on either DNA sequence or conchological data.

Some pupillid species have unique habitat requirements and ecological patterns. *Vertigo alabamensis* and *V. malleata*, for instance, are limited to base poor pine savanna, bay forest, and bog habitats along the eastern seaboard. These sites are so highly acidic that it is rare to find unpitted living shells, with these being dissolved completely within a few months. Because *V. alabamensis* juveniles only hatch during the spring, it is thus only possible to find adult shells during late spring and early summer. Shells from this cohort will completely vanish by late summer. Another interesting species is *Vertigo meramecensis*, which is limited to mesic limestone and dolomite cliffs from the Ozarks to southeastern Minnesota. When aestivating, its mucus trail dries to form a resistant cord that attaches the snail to its vertical habitat, in essence a self-made belay-line. If dislodged, the snail is able to crawl back up this cord and onto the cliff face.

Field Collection Techniques

The best way to collect pupillid land snails is by the field sieving of leaf litter. This procedure consists of throwing handfuls of litter onto a shallow sieve of 2mm mesh nesting loosely inside a sieve of 0.6mm mesh, accompanied by vigorous shaking, tapping, or other agitation (Figure 5). Both coarse (>2mm) and fine (0.6mm - 2mm) fractions should be observed in the field (with magnification as necessary) to estimate the location of favored microsites, species richness and abundance. Appropriate microsites are then targeted for additional sampling, with approximately 50-500ml of fine material (0.6-2.0 mm) being collected per site, with a goal of capturing at least 200 individual shells. Sievings are removed from the field, dried at room temperature, and then passed through a 0.6mm sieve, with fractions being hand picked against a neutral background using low magnification as necessary. Though use of this method, it is relatively easy to accumulate large numbers of pupillid individuals from many sites.

A Sampling of North American Pupillids

The final plate (Figure 6) provides a glimpse of the continental diversity in this group. This image includes examples of most known genera from North America, with multiple species being represented for *Gastrocopta* and *Vertigo*. Except for the images of *Sterkia* and *Bothriopupa* individuals, which are century-old collections from the Carnegie Museum, the remainder represents recent collections made by either myself or Brian Coles.

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From the Red Sea

Moti Kovalis

An endemic and rare *Spondylus* from the Red Sea is the beautiful *S. pickeringae* Lamprell, 1998. This *Spondylus* is quite variable and typically varies from forms with numerous dense short spines to forms with massive long spines. The rarest form is the albino shell. The two specimens shown here are from the north part of the Gulf of Aqaba, from 40-45 meters deep. The usual color form for the *S. pickeringae* is white ribs ending with large white spines. Between the major ribs are tiny brown spines giving the upper and lower valves their recognizable appearance. In the albino form these tiny spines are white. Both specimens are otherwise typical for this species. They measure 120mm for top image and 130mm for the bottom image.

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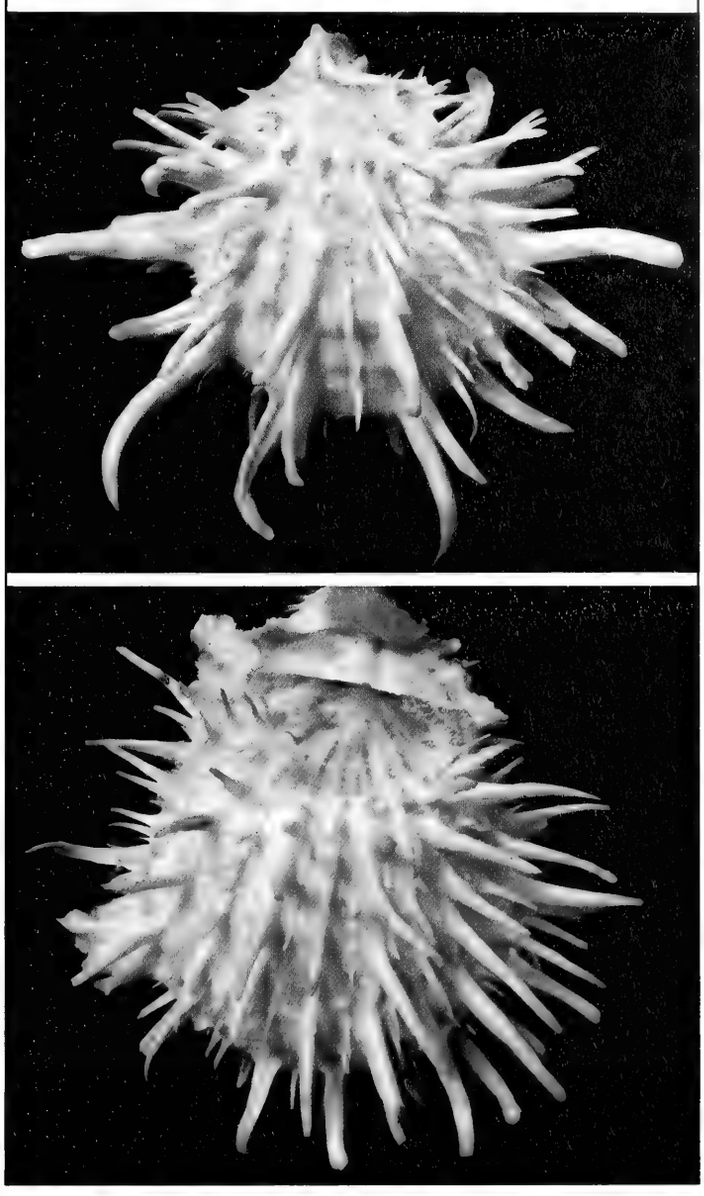


Just a Plain Black Slug: *Belocaulus angustipes*

Jerry G. Walls
Photos by Maleta Walls

Seeing a slug crawling across a sidewalk is central Louisiana usually is not exciting, but seeing one in late January did stop me in my tracks. The slug itself, a black-velvet leatherleaf, was not colorful. In fact, it was just a 2-inch glossy black slug shaped like a finger and with its black tentacles mostly retracted. That it was crawling across a sidewalk and parking lot just a few miles from home was more interesting, especially since I'd seldom seen this slug alive before and it was 40 degrees Fahrenheit.

The black-velvet leatherleaf is a species introduced to the U.S. in plants from South America, probably southern Brazil or Argentina, and known from Louisiana and Alabama since 1960. In 1977, Dee Dundee reviewed the status of the species in the southeastern U.S. and showed it to be found from southwestern Louisiana across Mississippi into central Alabama, with a record from southern Florida. I now find it to be fairly common in grassy yards in Avoyelles and Rapides Parishes, central Louisiana.

Dundee and her students conducted several experiments on the natural history of this slug in New Orleans, showing it to be active mostly at night, common to abundant where St. Augustine grass is used in lawns, and most active between 68 and 75 degrees Fahrenheit, dying at temperatures over 82 degrees and becoming inactive at near freezing temperatures and very low humidity. I find it will feed during even short spells of warm, rainy winter weather, coming up from the soil where it was protected from temperature extremes. The black-velvet leatherleaf does well in greenhouses and outside environments near lawns and gardens. During the hot, dry summer months it disappears into the soil, but from March to June, and September to November, it can be found in numbers, often with its egg masses shallowly buried in the soil. Adults can live at least five years.

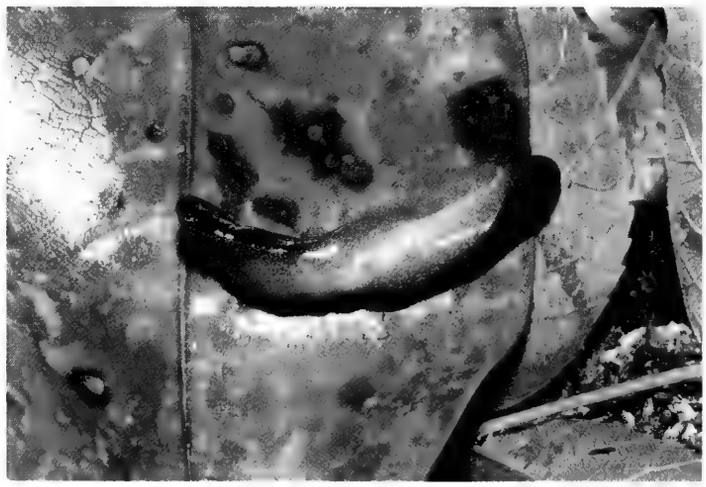
The glossy black coloration and overall shape make black-velvet leatherleafs, *Belocaulus angustipes*, easy to identify. The specimen on the right is about as oval-shaped as they get. When extended and moving the slug seldom shows more than the tips of black tentacles.

Names and Structure

Dundee followed accepted usage at the time and called the slug *Veronicella ameghini* Gambetta, a name that can be found in most literature dealing with American slugs. Recent revisionary work by J. Thomé and coworkers (such as Thomé 1989 and Thomé, Santos & Pedott 1997) has changed the names of many leatherleafs, including this one. It appears that the best name to be used now is *Belocaulus angustipes* (Heynemann).

The veronicellids or leatherleaf slugs include over 300 species native to tropical areas around the world. One species, the Florida leatherleaf, *Leidyula floridana* (Leidy), is native to Florida, but at least five species have been introduced into the southern U.S., most noticed within the past 20 or 30 years. The Florida leatherleaf has also been moved about and now occurs widely in greenhouses and protected areas from southern Texas and Mexico to Alabama.

As is so common with slugs, complete identification depends on dissections of the sexual organs. From our native slugs, the veronicellids are distinguished externally by having the entire back covered with a thick mantle that has a distinct "edge" on each side separating it from the mantle under the body on either side of the narrow foot. The breathing pore is at the back end of the body rather than visible as a curved slit or circle in the anterior third of the animal as in native philomycid slugs. Contracted, preserved specimens seen from below bear a striking resemblance to chitons but with a much narrower foot. Few specimens are over four inches long, and our introduced species are usually less than three inches even when extended. All the species appear to be herbivores feeding on grasses and other tender plants, with some considered important



In black-velvet leatherleafs, the undersides are mottled with gray, contrasting with the narrow cream foot.

crop pests in the tropics and greenhouses. Species that can become quite abundant locally, such as the black-velvet leatherleaf, have the potential to become lawn pests. Leatherleafs also can serve as intermediate hosts to a parasitic nematode worm, *Angiostrongylus costaricensis*, that may infect humans in the tropics.

Louisiana Species

At least three leatherleaf slugs are definitely recorded from Louisiana, although others should be expected near nurseries and greenhouses dealing in warmth-loving plants. The slugs slip in both as adults and as tough eggs in the soil around plant roots.

The three Louisiana species, all introduced, can be told apart by color and shape using the following simple key:

1A. Uniform velvety black above, grayish on either side of narrow cream foot; finger-shaped when active, oval when not…black-velvet leatherleaf, *Belocaulus angustipes*

1B. Not uniformly black above; more leaf-shaped...2

2A. Thin middorsal pale stripe flanked by dark band or row of spots on each side; wide oval in shape... Florida leatherleaf, *Leidyula floridana*

2B. If pale dorsal stripe present, not flanked by dark band on each side; many small dark spots scattered over back and on either side of foot; narrower oval in shape…spotted leatherleaf, *Diplosolenodes occidentalis*

A fourth species, *Sarasinula plebeia*, the Caribbean leatherleaf or bean slug, is externally similar to the spotted leatherleaf and also may be present in Louisiana but has not yet been differentiated. Some young black-velvets appear speckled and could be confused with the other species, so dissection of adults is essential for proper identifications.

Large glossy black land planaria of uncertain identification (*Rhynchodemus sylvaticus* or *Artioposthie triangulata*?) are sometimes found with black-velvet leatherleafs. The planarian likely preys on the slugs as well as earthworms.

Look-alike Flatworms

But wait, not all black sluglike animals in Louisiana are black-velvet leatherleafs. Also seen on occasion is a look-alike predator, a free-living terrestrial flatworm or planarian, phylum Platyhelminthes. This glossy black, flattened planarian may be as long and nearly as wide as the slug, but a closer look shows that its head end tapers to a nearly square point and lacks tentacles. When the animal contracts, it becomes very slug-like and could easily be misidentified from a casual glance. This planarian could be the black variety (*americanus* Hyman) of the widespread native species *Rhynchodemus sylvaticus* (Leidy), but it appears a bit large for that species. There also is a possibility that it is the introduced New Zealand flatworm *Artioposthia (Arthurdenyus) triangulata*, although its coloration appears too uniformly black for that species. Since I have not tried to dissect specimens (necessary for a full identification), any name should be considered tentative at best, terrestrial flatworm identifications are really tough.

Terrestrial planarians prey on earthworms (some can eat two earthworms a night), snails, and probably other small soil animals, so it is not impossible that the black planarians are preying on the black slugs!

As introduced snails and slugs become more common in the U.S., often displacing native forms or occupying niches not available to native species, we should remember to take a closer look at even the plainest mollusks, there might be some surprises in store.

My thanks to David G. Robinson, APHIS, Acad. Nat. Sci., Philadelphia, PA, for initial identification of *Belocaulus angustipes* and pointing out name changes.

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2009 SHELL SHOWS & RELATED EVENTS (August – December)

Following information is subject to change. Please verify with individual organizations

Aug. 14-16 2009 **JERSEY CAPE SHELL SHOW**, Stone Harbor, New Jersey
The Wetlands Institute, Stone Harbor
Karen Lelli e-mail: kjlelli@comcast.net (856) 691-5831

Sept. 19-20 2009 **30th INTERNATIONAL SHELLS & FOSSIL BOURSE,** Ottmarsheim, France
Salle Polyvalente, Rue de la Priscine
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France (3) 89-26-16-43

Sept. 25-27 2009 **OREGON SHELL SHOW**, Portland, OR
Oregon Museum of Science & Industry, 1945 SE Water Ave.
Donna Saffir, 10409 NW Burkhardt Court
Portland, OR 972290 (503) 297-3009
E-mail: dragonz@comcat.net

Sept. 25-27 2009 **NORTH CAROLINA SHELL SHOW,** Wilmington, NC
Cape Fear Museum of History & Science
814 market Street
Ann Buddenhagen, 618 Crabbery Lane
Raleigh, NC 27609 (919) 787-7103
E-mail: abuddenhagen@nc.rr.com

Sept. 26-27 2009 **ANNUAL GERMAN SHELL FAIR**, Oehringen, Germany
KULTURA Hall, Herrenwiesenstr. 12
Kurt Kreipl, Hoehenweg
D-74613 Oehringen-Cappel, Germany Tel. (7941) 62-826, fax: (7941)2065
E-mail: meeresmuseum@t-online.de

Oct. 10-11 2009 **PHILADELPHIA SHELL SHOW,** Philadelphia, PA
Academy of Natural Sciences, Parkway & 19th St.
Al Schilling, 419 Linden Ave.
Glenside, PA 19038 (215) 886-5807
E-mail: alsch@bellatlantic.net

Oct. 31 2009 **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** Essex, England
Theydon Boys community Centre, Theydon Boys, Epping, Essex
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England 44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

Oct. 31 Nov. 1 2009 **14 th PRAGUE INTERNATIONAL SHELL SHOW,** Prague, Czech Rep.
KULTURNIDUM LADVI Buresova 1661, Prague 8
Jaroslav Derka, Holeckova 51/370
15000 Praha 5, Czech Republic 42 (2) 5731 6246
Email: jderka@volny.cz http://cksl.webpark.cz http://shells.webz.cz

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Don't Miss the Boat!

By Bob Pierson

The *Silver Alatus* will set sail on its maiden voyage at the 2009 COA Convention July 19-23 on Florida's Clearwater Beach — BE THERE!

You can still make reservations at our host hotel, the Hilton Clearwater Beach Resort, at the special reduced rate of $159.00 + 12% tax for up to 4 people per room until June 22, 2009. This special rate will be honored three days prior to and three days after the convention. Just go on line to: www.clearwaterbeachresort.com and enter the Hilton Group Convention ID Code: SHELGS. Or you can call 1-727-461-3222 or 1-800-753-3954 (in the USA only); overseas call 1-727-461-3222. Remember, you MUST mention Conchologists of America to get this special rate!

Now is the time to get your Boarding Pass (Registration) and show application sent in. If you do not have the documention you can download them from the COA web site at: www.conchologistsofamerica.org. Shore excursions are filling up fast and once a trip is filled it will no longer be available. Be sure to enter our Suncoast Silver Spectacular competitive show, too. The 1st and 2nd place trophies are really unique. Incidentally, if you present any "Cruising The Suncoast" logo to your Boarding Agent at the time of boarding, you will receive a ticket for a special drawing sometime during the cruise.

If you plan on driving to the convention, be aware that parking is at a premium. Parking is complimentary for one car per stateroom for guests of the Hilton, otherwise the charge will be $5/day ($8 overnight) to park at the hotel on a space available basis. There is also metered parking in nearby beach parking lots, if you don't mind walking a block or two.

If you have any shells that you have not been able to identify, bring them, along with locality data, and let our shipboard panel of experts go to work on them during our Shell ID session.

We are still accepting your donations, both shells and shell-related items, as well as Convention Booster donations. You have until June 22nd to have your donation credited in our Passport Program Booklet. Please – shells should be clean and in good condition with pertinent data included (at least where the shell was found and a name if known). All donations should be sent to: Katherine Smith, 3227 MacGregor Drive, Palm Harbor, FL. 34684-2347 USA. Why not send your donation in today!

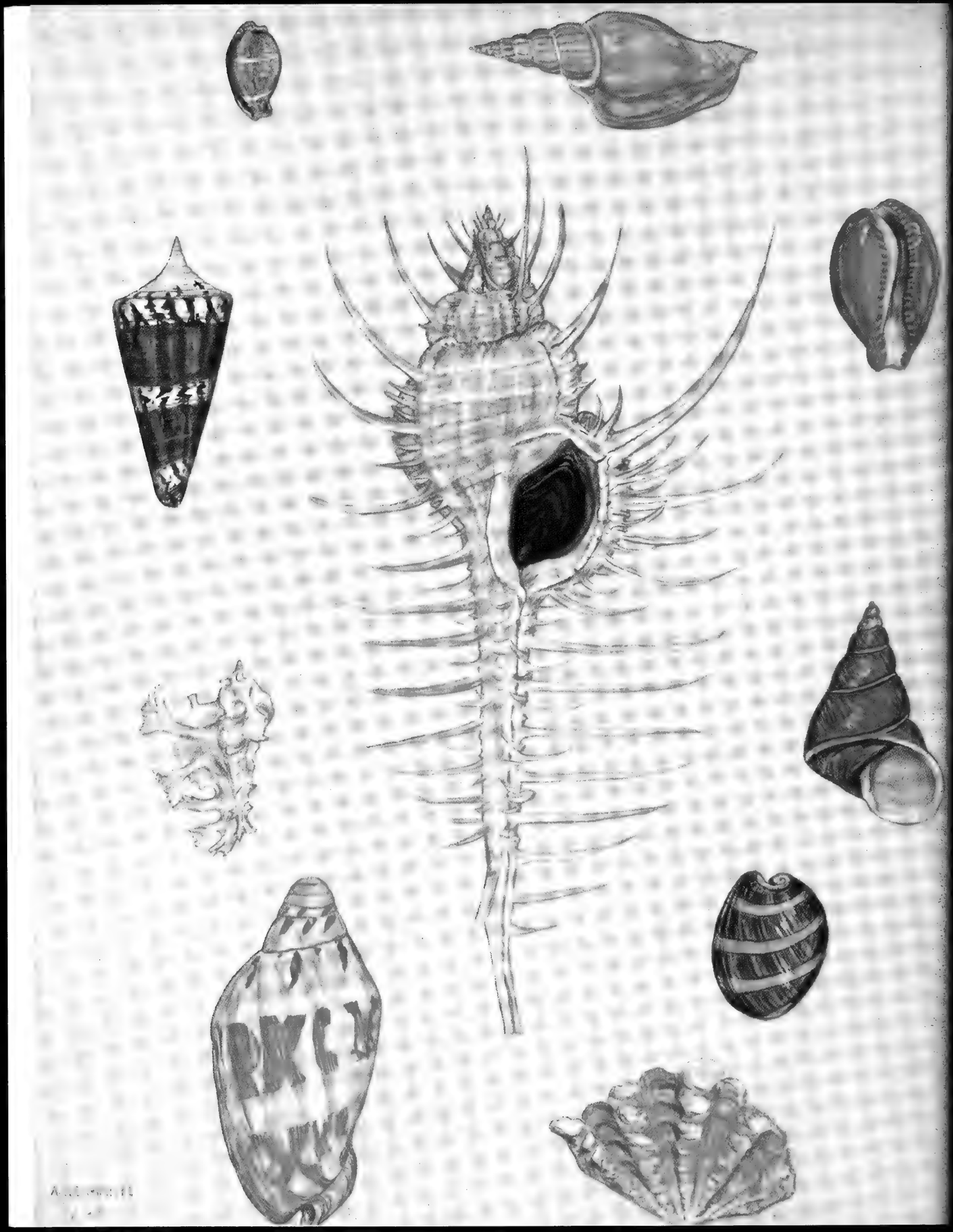
Between shore excursions, programs, auctions, and other activities, you won't have time for much more during the convention; but, here are some other local points of interest you might want to consider during your stay:

- Caladesi Island State Park - designated America's #1 beach.
- Hook The Big One - many fishing boats are just across the roundabout at the marina or cast your line from Pier 60.
- Join the Sunset Celebration at Pier 60 - right next door to the Hilton.
- Hit a Hole-In-One at Captain Bligh's mini-golf overlooking the Gulf.
- Go on a safari at Busch Gardens in nearby Tampa.

- See Bird Rescue and Care at the Suncoast Seabird Sanctuary just down the road.

Click on www.beachchamber.com and www.St.PeteClearwater.com for other things to see and do while you are in the Clearwater area.

Questions? Contact us at COA2009@aol.com



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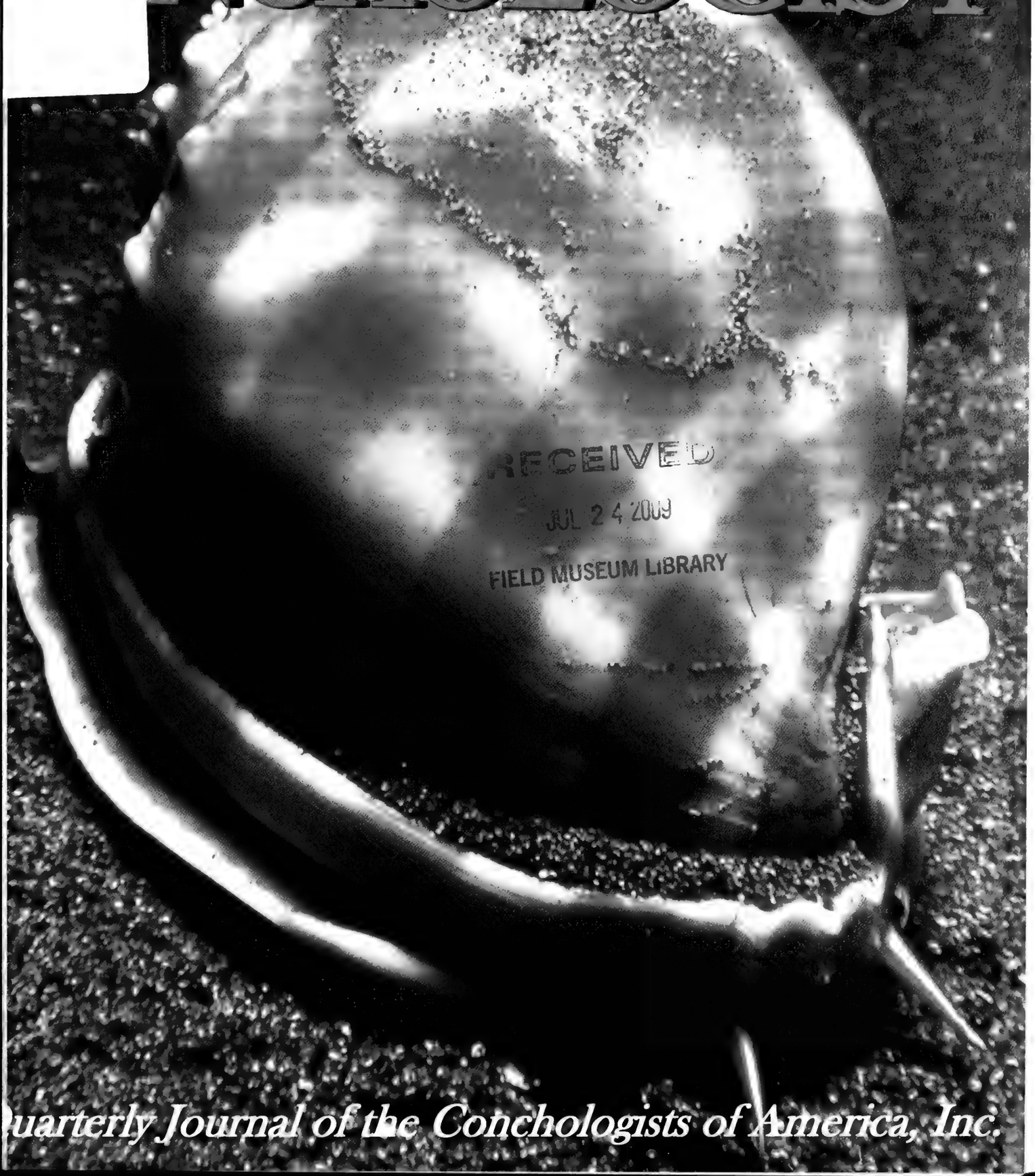

Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS OF AMERICA, INC.

Volume 37, No. 2 June 2009

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

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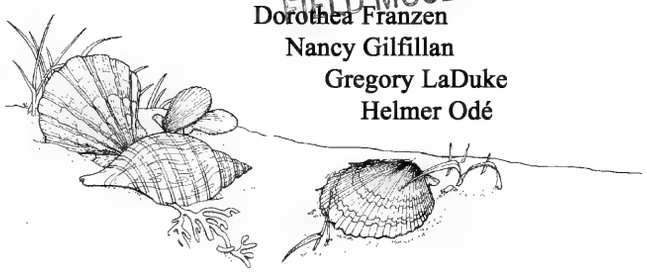
IN THIS ISSUE

In Memoriam:

Barbara Lee Barfield
Stephen Bruce Brownlug
Dorothea Franzen
Nancy Gilfillan
Gregory LaDuke
Helmer Odé

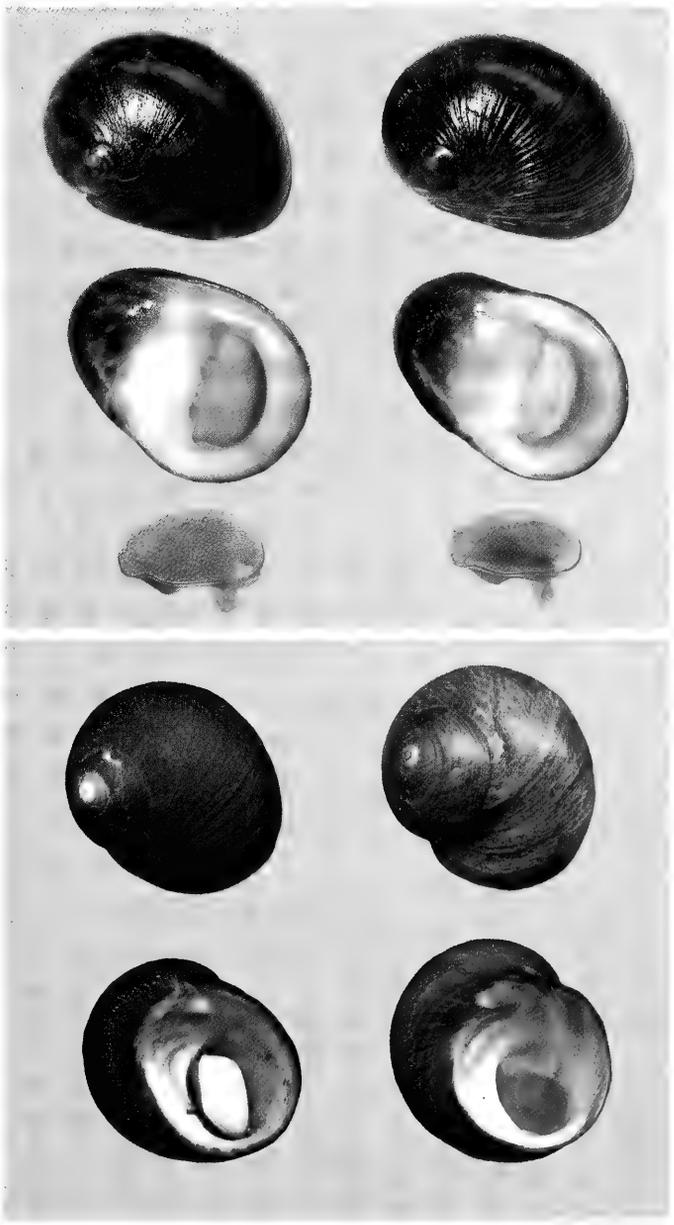


Front cover: *Phalium bandatum bandatum* Perry, 1811, photographed in 40 feet of water, at night, off Negros Island, Philippines. This specimen was cruising along a black sand slope actively hunting. Photo courtesy of Charles Rawlings

Back cover: This is the companion piece to the art work we featured on the back cover of the last issue. Also by COA member Arline Reimann of California, it again displays several well-known shells painted in a manner reminiscent of shell art 150 years ago.

Some Look-A-Like Shells

Every shell collector knows that proper identification of a species is often made difficult because many shells look similar to each other. One trick soon learned is the use of locality data, which does not always work. One is then left with using finer points of shell morphology – physical characteristics such as color, shell structure, and opercular traits. The illustrations here are not unusual because of their similarities, but rather because they not only look similar, but each pair was found on the same rock in the same locality. The upper pair of nerites were collected on a wave-splashed rock in Samoa. The shell on the left is *Nerita maxima* Gmelin, 1791, and the shell on the right is *Nerita polita* Linnaeus, 1758. There are minor differences in shell structure, but the telling difference is the operculum. The bottom pair was collected on a rock on a beach in Chile. The shell on the left is *Prisogaster niger* (Gmelin, 1791) in the family Turbinidae, and the shell on the right is *Diloma nigerrima* (Gmelin, 1791) in the family Trochidae.



A Canadian Cowrie?

by

Lindsey T. Groves

The prospect of a examining a fossil cowrie from an area underlain by Paleozoic strata and overlain by thin Pleistocene deposits (i.e., an area that should be void of fossil and living cypraeids) was indeed intriguing. It turns out that the specimen in question was recovered from an archaeological homestead site on Navy Island in the Niagara River approximately four km above Niagara Falls, Ontario, Canada. Navy Island is part of Parks Canada's Niagara Historic Sites complex and is designated as a National Historic Site commemorating the 1761-1764 British Naval Dockyard and the Mackenzie Rebellion of 1837-1838. Known as the Parker Site, this area also includes a War of 1812 gun emplacement, a mid 17th century Neutral/Seneca native occupation site, and a Late Archaic/Early Woodland occupation site. The main phases of occupation are the mid 19th century homestead and the Late Archaic/Early Woodland periods.

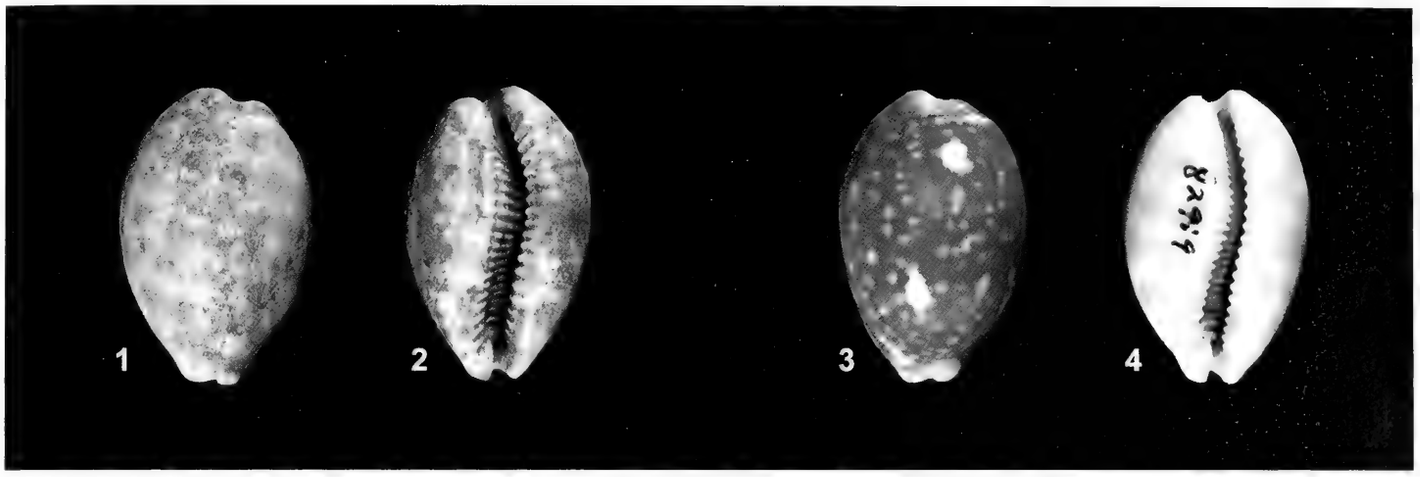
The cowrie was recovered from a disturbed early 20th century context plough zone. The plough zone layer, which nearly reached the sterile soil horizon, from which the cowrie was recovered, included a roughly equal mix of historic and prehistoric artifacts. Due to the mix of artifacts its cultural affiliation is uncertain, however cowrie shells, known as *mi-kiss* or *megis* (sacred shells), have been used as ceremonial objects in Chippewa or Ojibway ceremonies in Ontario, Canada (Hoffman, 1891; Ritzenthaler, 1978; Benton-Benai, 1988). Another cowrie found in an Ontario archaeological site was noted by Montgomery (1910) who documented a specimen of *Monetaria moneta* (Linnaeus, 1758) [as *Cypræa moneta*] from a series of burial mounds near the township of Otonabee, Peterboro [*sic*] County, Ontario. The worn specimen was unperforated and believed to have been used as money rather than as an ornament. Based on decomposition rates of organic material within the mounds, the age of the burial site was estimated to be 10th century. Other mollusk shells found within the mound included *Oliva sayana* Ravenel, 1834 [as *O. litterata* Lamarck, 1810], *Marginella apicina* Menke, 1828, and *Busycon contrarium* (Conrad, 1840) [as *Fulgur perversa* Linnaeus, 1758]. These three species are from the southeastern United States, but *M. moneta* is from the tropical Indo-Pacific (of which Montgomery curiously states "the home of this cowry is in the Pacific Ocean near California"). They could, however, have easily been acquired through trade. Interestingly these same three species were reported by Shetrone (1954) along with the cowrie *Macrocypraea zebra* (Linnaeus, 1758) [as *Cypraea exanthema* Linnaeus, 1767] from a Hopewell site (~200 B.C. to 500 A.D.) in nearby Ohio, further demonstrating probable acquisition through trade.

Prior to examination a logical first thought would be that the Navy Island specimen was affiliated with a western Atlantic species of cypraeid or a fossil species from Cretaceous and/or Cenozoic strata. When the specimen in question was examined it was quickly determined that it was a worn and bleached *Lyncina*

Map of Navy Island, Canada, used with permission from Wikipedia at: http://en.wikipedia.org/wiki/Navy_Island

vitellus (Linnaeus, 1758) [the Pacific Deer Cowrie], an extant tropical Indo-Pacific species (figs. 1-4). Although this species is known from Miocene rocks of Indonesia (Beets, 1941, Martin, 1919, van der Vlerk, 1931), Pliocene rocks of Indonesia (Beets, 1941, Dharma, 2005), and Pleistocene rocks of Hawai'i (Kosuge, 1969, Ostergaard, 1928) and Egypt (Newton, 1900), the Navy Island specimen is not a fossil. This is the first record of *L. vitellus* collected from an archaeological site in North America. Jackson (1917) noted that *L. vitellus* (as *Cypraea vitellus*) and other cypraeid species have been used as amulets and recovered from pre-dynastic burial sites at Karnak, Egypt. As mentioned above, the cultural context of the Navy Island site is unknown. The only other molluscan remains found with the *L. vitellus* specimen were fragments of the bivalve *Mercenaria*.

How did this cowrie, which is found anywhere from the Red Sea to Hawai'i, end up in an archaeological site in Ontario, Canada? In all likelihood it was acquired through trade or purchase



Figs. 1-2 *Lyncina vitellus* (Linnaeus, 1758), Parks Canada 49H167A23-1, from Navy Island homestead site, Ontario, Canada (41 mm length x 26.3 mm width), Fig. 1 abapertural view, Fig. 2 apertural view. Figs. 3-4 *L. vitellus* (Linnaeus, 1758), LACM 82919, from Cabra Id., Mindoro Occidental Prov., Philippines (39.8 mm length x 24.8 mm width), Fig. 3 abapertural view, Fig. 4 apertural view.

and carried to the Parker Site by its owner and subsequently buried either intentionally or accidentally.

Acknowledgements: Many thanks to Christopher P. Meyer (Nat. Mus. Natural Hist.) for suggesting that Tom Duda (Univ. Michigan) send me the cowrie specimen for identification. Special thanks to Cesare d'Annibale (Parks Canada, Cornwall, Ontario) for sharing site data, discussing the provenance of the Navy Island cowrie specimen, suggesting a key reference, and reviewing an early draft of the manuscript. Debbie Berg (Univ. Toronto, Ontario) also supplied locality data. Lowell Herbrandson (Nat. Hist. Mus. L.A. Co., Res. Library) located a pertinent reference. Digital illustrator Brian Koehler (Nat. Hist. Mus. L.A. Co. Entomology & Malacology) assisted with image preparation.

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UNDERNEATH THE MANGROVE TREE: DISCOVERING THE SHELLS OF GRENADA

By Karen VanderVen

Shades of James Bond! We all remember "Underneath the Mango Tree," the famous song from the James Bond film "Dr. No." For our purposes, however, "Underneath the Mangrove Tree" more appropriately captures the adventure of a recent exploratory trip to the small island of Grenada (133 square miles) in the West Indies.

We traveled to Grenada on the prospect of discovering what shells were to be found on this Caribbean island. Led by Peggy Williams, the intrepid group included Tom Watters, Duane Kauffmann, Linda and Jim Brunner, my sister Clare Horner, and myself. We were all aware we were visiting a spot with a degree of notoriety. First, Hurricane Ivan veritably destroyed the island in 2004. Second, yes, this is the Caribbean island that was invaded by the United States in 1983 after American students were placed in house arrest by the leaders of a military coup.

We landed on the evening on November 14th, and following an endless wait to go through Customs, arrived in our rented van at our very pleasant and comfortable accommodation, the Coral Cove resort in Lance aux Pines. "Under the Mango Tree" has a line about being "underneath the moonlit sky." That was not to be the case this night or much during the trip. Inky black clouds scudded across the sky and whitecaps marched in waves over the coral reefs in the large bay fronting the resort.

Let me hasten to add that despite frequent wind and rain, which occasionally obscured visibility in the water, nothing deterred our group from its mission. If one option did not work, we quickly and stoically tried something else, leading, as you'll see, to good shell finds every day. The Brunners had been to Grenada in the 1980s and gave us an overview and helpful suggestions based on their past trip. This, too, enhanced our possibilities.

With the first dawn we could see a succession of dark lines in the expanse of water, indicating reefs. Occasional light blue areas suggested a sandy bottom and the rest we assumed (correctly) would be grass and turnable slabs. Bordering the beach were rocky areas. It was truly an all-habitat spot with something for everybody and plenty of area for all. We suited up and lurched down the bluff to the water. This first venture yielded several *Leucozonia nassa, Leucozonia ocellata,* fine dark *Luria cinerea,* and a few smaller species.

Our first stop in the van away from the resort was north on the eastern coast at Port Jeudy, where there was an inlet with a small beach and a damp friendly dog to greet us. This place turned out to be bivalve country, particularly for *Lima caribaea,* there being nice dead specimens under almost every slab. Just before we were to leave I discovered a bed of dead sea urchins. Splayed on top of many of them were fine bivalves. Especially attractive were orange and yellow *Papyridea soleniformis.* Also found here were *Americardia media, Brachtechlamys antillarum, Trachycardium isocardia, Trachycardium magnum, Arcopagia fausta, Laevicardium vitellinum, Chione cancellata, Tellinella listeri,* and *Arca imbricata.* Jim brought in a *Chama macerophylla,* and Tom brought in a crabbed *Voluta musica.* This was the first of this coveted shell we found.

A River Runs To It

The following day was gray and rainy to start, so we decided to take an exploratory drive up the western coast that fronts the Caribbean, go around the top of the island, and then return back down the eastern coast that faces the Atlantic Ocean. Avoiding the famous Grand Anse Beach (word had quickly gone around that it was shell-less) we wended our way through the narrow roads of picturesque St. Georges, the capital city, and started the uphill drive.

As we drove along, expertly piloted by Jim at the wheel, we noticed that from village to village the sidewalk frontages were painted the colors of Grenada: yellow, red and green. Deep drainage ditches bordered all the narrow roads; certainly necessary if the

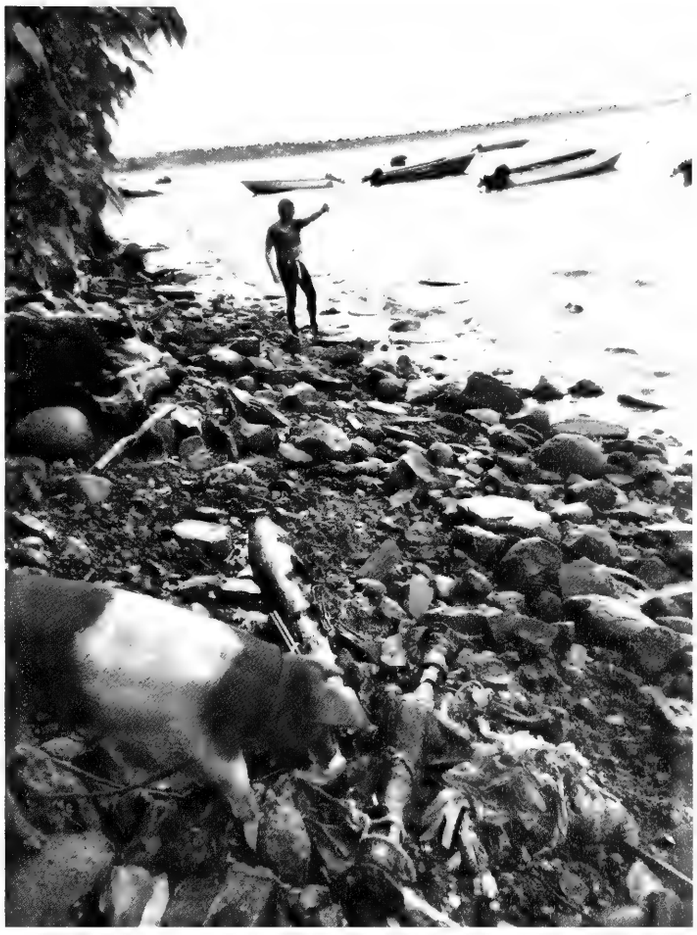
amount of rain we were experiencing was any criterion. One could see and hear the muddy water rushing down the ditches to the sea, extending muddy plumes into the water.

One move too close to the edge of the ditches and it would be curtains for the tires, our van, and us. To keep ourselves relaxed we kidded each other and told rather bad jokes, like: "Why did the chicken cross the road? He heard the shelling was better on the other side." This was, of course, preceded by a chicken running across the road in front of the van.

As we went further north, we began to stop and check out a few gray volcanic sand beaches. Not much luck, as these beaches usually were near the outlet for the brown rivers of water cascading down from the hills. Finally we found a beach where a discreet inquiry by Peggy led to a man bringing out a basket of shells that at first glance did not look promising. A closer look showed that amongst the vase shells (that had seen much better days), and amid broken and faded specimens of what had probably once been *Conus daucus*, there seemed to lurk a few prizes – at least to me. There was a *Conus regius citrinus*, the largest I've ever seen, and a huge *Conus ermineus.* Further digging and I turned up a decent-sized brown-marked *Voluta musica* and several *Cypreacassis testiculus.* I scrounged up a reasonably generous handful of Eastern Caribbean dollars and coins, held them up for an affirmative nod, and the shells were mine. Home, following cleaning and oiling, they have turned out beautifully and are among my best shells from the trip.

Amazingly, on another narrow dreary beach Clare and I found several *Conus puncticulatus*, *Arcopagia fausta,* and *Bulla occidentalis.* I have learned from previous tropical shelling trips that you are as likely to find something good up in the garbage piles back in the bushes as you are in the water or on the beach. Sure enough, scanning a jungle-tangled mess above the water line yielded a perfectly fine *Stombus pugilis.* None of us had any idea how these shells had gotten to such an unprepossessing spot, but as the saying goes…shells are where you find them.

Shells in a Grenada market place. The fresh (and still juvenile) *Strombus gigas* display wonderfully deep and vibrant colors. Also in this pile of shells are *Strombus costatus, Strombus pugilis, Cassis tuberosa, Charonia variegata,* and numerous smaller specimens. Photo by Linda Brunner.



Clare shares a shoreline with a local resident of the porcine persuasion. I do not know what the pig found, but Clare found two nice specimens of *Cittarium pica.* Photo by the author.

East Side, West Side

Heading south on the other side of the island we found another obscure beach fronting a very narrow little harbor (this was the Caribbean west coast). Peggy, on another inspired impulse, suggested we stop by the side of the road in front of a shack. Miracle of miracles, the man who emerged had a whole bag of *Strombus pugilis* that he quickly laid out for us. A high-level transaction resulted in Tom acquiring the shells, later shared among us all. Clare, in the meantime, ventured to the rocky shoreline, sharing it with a foraging pig. For her trouble she found two large and, actually, very handsome *Cittarium pica.*

On another day we took an open boat ride north to Hog Island where in the past *Chicoreus brevifrons* had been found. Indeed a venture into the grass-bottomed water yielded me an ancient spineless specimen (Peggy found a better one) and a similarly moribund *Phyllonotus pomum.* The best shells here were the Caribbean vase shells, *Vasum capitellus;* Linda brought in two fine live specimens. Under some rock slabs were small shells such as *Supplanaxis nucleus* and *Trachypollia nodulosus.*

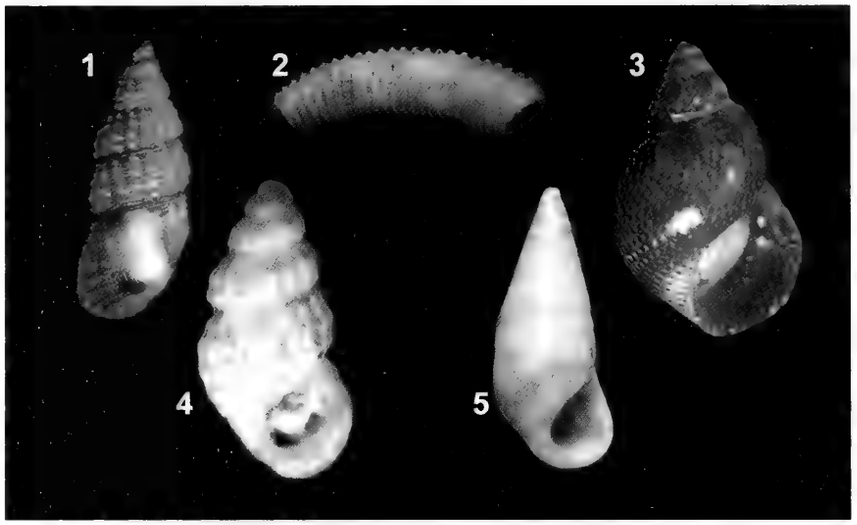
North of our location was Calivigny Island, and when a storm cleared the last day, Clare, Tom, and I went there with the local boat captain. It rained sporadically, so we got chilly after stopping at a few different spots where my best find was a small one-inch cone, under a rock. Just a *Conus regius*, I thought…

Underneath the Mangrove Tree

Two special factors led to my favorite shelling experiences of the whole trip: the sense of search, and the hope for something I didn't already have in my collection. Linda had mentioned that on the past trip she found *Pugilina morio* in the mangroves around a rock-faced corner of the bay. The next morning Clare set out early for the bay while I decided to laze around a bit. She came back with three specimens of *Pugilina morio.* Needless to say I threw my rig on in the beat of an eyelash and we set out back to the mangroves.

Once arriving at the mangroves, the technique was to dig through the goopy mud under them. I pawed through it for many minutes, when.... finally! Up in my hand came a fine, relatively large specimen. Soon I found another, along with one very attractive dead venerid species and several pairs of *Asaphis deflorata.* Tom too was able to find several fine specimens the next day.

Later Peggy mentioned that it was probably unusual to find *Pugilina morio* this far north. One of my shell books confirmed that these shells confine themselves to muddy areas surrounding mangroves, and that's exactly where, and the only place on this trip, they were found.



Some of the micro shells collected by Duane Kauffman. 1. *Bittiolum varium* (Pfeiffer, 1840), 2. *Caecum regulare* Carpenter, 1858, 3. *Eulithidium affinis* (Adams, 1850), 4. *Manzonia caribaea* (d'Orbiny, 1842), 5. *Zebina browniana* (d'Orbiny, 1842). The size of these shells can be judged by the *Caecum regulare*, which is less than 2mm in length. Photo by Duane Kauffman.

Friendly Tips

Like astute detectives our ears were pricked up for any tip as to what might be found or was just found, at a particular spot. Somebody would generously mention finding something, with a quick response, certainly from me, "Where, where?"

For example, Duane mentioned casually one evening that he found a *Purpura patula* on the shoreline rocks. In the morning, I was restless and so I hustled on down to the shore. Soon Clare joined me. We worked our way out around the rocks and soon I found a small shell I didn't recognize. Suddenly it hit me! It was a *Purpura patula.* Some larger and more easily recognizable specimens were among the numerous species found on the rocks bordering the beach. These included a variety of rock species, periwinkles, and *Nerita* species such as *Nerita versicolor* and *Nerita tessellata.*

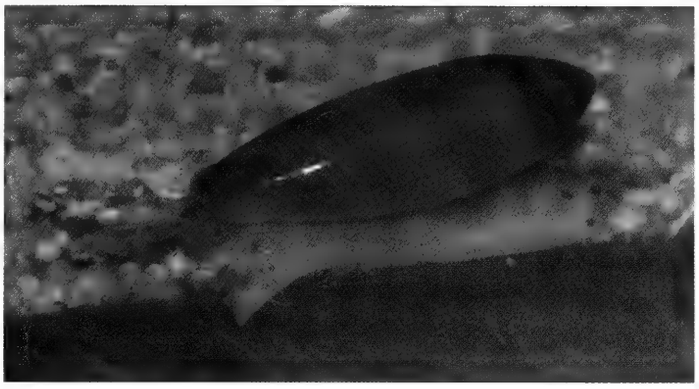
Later Tom mentioned that he found *Columbella dysoni* on the dock pilings. So once again the search was on. I dove under the dock and systematically patted every post up and down trying to feel for a perturbation. There were actually some interesting flat black oyster species (*Isognomon alatus*) fastened to the posts. I continued the search under the slabs surrounding the dock and discovered later, among a number of *Columbella* specimens I collected, that I actually had two of the distinctive *Columbella dysoni* with their broken brown lines.

Tom Watters (left) and Jim Brunner (right) begin the serious business of negotiating for some fresh specimens of *Strombus pugilis.* Photo by author.

A Gig in Mud

On our last full day, once again the weather was windy, so we had to scratch a planned boat trip. What to do? I decided that a return trip to the muddy mangroves would be just the thing. Why? No need for any more *Pugilina morios,* but I had become enamored of the one venerid bivalve (that turned out to be *Protothaca granulata*) I found on the initial excursion.

So once again I edged my way around the rocky shoreline and over to the mangrove trees. Kneeling in the mud, and hoping not to land on one of the ubiquitous sea urchins, I continually inched my way here and there around the trees, pausing to blindly dig



The small (less than 10mm) but very elegant marginellid, *Volvarina avena*. This shell is usually encountered in beach drift and often lacks the vibrant colors shown here in a living specimen. Photo by Peggy Williams.

deep with my bare hands in the hope that a few of the bivalves would come up in my hand. At last they did.

They were plentiful in a circumscribed area about the size of a kitchen table. While admiring my muddy handful I looked up for a moment. The clouds had broken and the sun was shining over the craggy peaks above the bay. Beautiful. I suddenly realized, still kneeling and pawing in the muck, just how much fun I was having.

These beaded venerids, upon cleaning, are indeed handsome, with the most outstanding ones having black blotches against a cream background. Viewed through a magnifier, the beading is obvious.

The Treasure Trove of Coral Cove

While we enjoyed our adventurous exploratory forays around the island, it turned out that the most prolific source of shells was indeed the large bay right down the bluff from our lodgings.

For example, Tom and Duane were interested in micros. Each morning bright and early Duane would go down to the shore with his sieve and bring up a tray of grunge, from which he would extract various treasures. One morning, a shaking of his tray showed several small green dots which proved to be emerald nerites (*Smaragdia viridis*). I was delighted when he gave me one.

Toward the end of the trip we started exploring away from the grass where there were lots of small slabs to turn over. We weren't disappointed. There were *Caribachlamys ornata, Muricopsis oxytata, Favartia cellulosa, Turbo castanea*, and small reef turrids such as *Crassispira fuscescens, Pilsbryspira albocincta,* and *Crassispira apicata.* Linda brought in the prize shell from this area: a huge, perfect, very colorful *Cypraecassis testiculus.* Peggy found a small live *Voluta musica* under the dock, the only live music volute found on the trip.

Other highlights were the abundance of handsome *Columbella mercatoria* and *Nitidella laevigata.* There were pen shells, *Pinna carnea,* in the grass, and fine small *Cymatium nicobaricum* under the rocks. Also well represented were star shell species such as *Astralium phoebium* (Jim had a special knack for finding these), *Mancinella deltoidea, Gemophos tinctus, Mitra nodulosa,* and *Olivella nivea.* Most of us were lucky to find the tiny shiny *Volvarina avena* and super-colorful and varied hawkwings, *Stombus raninus.*

The afternoon of our last day, some of us returned to the bay while Peggy and the Brunners drove off to see if they could find people selling shells. Prizes were in hand when these generous shoppers returned. Amongst the purchases were two *Conus granulatus,* a bit faded to be sure, but the fact they are the corded variety is ample compensation. Of course I was delighted when Peggy handed them to me. There were also *Colubraria obscura, Cymatium rubeculum,* and *Oliva reticularis.* One local offered pairs of *Trachycardium magnum* and Jim brought back a pair for each of us. This is a beautiful brown and pink shell without the spines many *Trachycardium* species have and another new species for me. Tom picked up some shells from our boat captain and passed a fine *Tonna pennata* on to me.

We enjoyed a final dinner together at a nice restaurant, "The Red Crab," as I recall, drank a toast to our shells, friends, Peggy's leadership, and Jim's miraculous driving, reviewed our finds, and anticipated our return to the States the next day.

To make the return even more palatable, once home I discovered a few extra dividends that weren't immediately apparent when the shells were first found. On careful examination I found that the *Conus regius* I thought I had found on Calivigny is not that species at all. While not large, it isn't crowned and is narrower than *Conus regius* and might be either *Conus cedonulli* or *Conus dominicanus.* One of the *Strombus pugilis* I acquired is a freak, with a highly elongated row of spines on its spire.

Viewing the species list, it is interesting how the finds included species found in areas both north and south of Grenada's location in the Caribbean. Collectively we found well over 200 species, micro and macro, showing what might await the shallow water collector and enterprising shell shopper visiting Grenada in the future.

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Acknowledgements:

Photographs: Linda Brunner, Duane Kauffmann, Peggy Williams, Karen VanderVen.

List of Species Found: Tom Watters (also for a critical reading of the manuscript).

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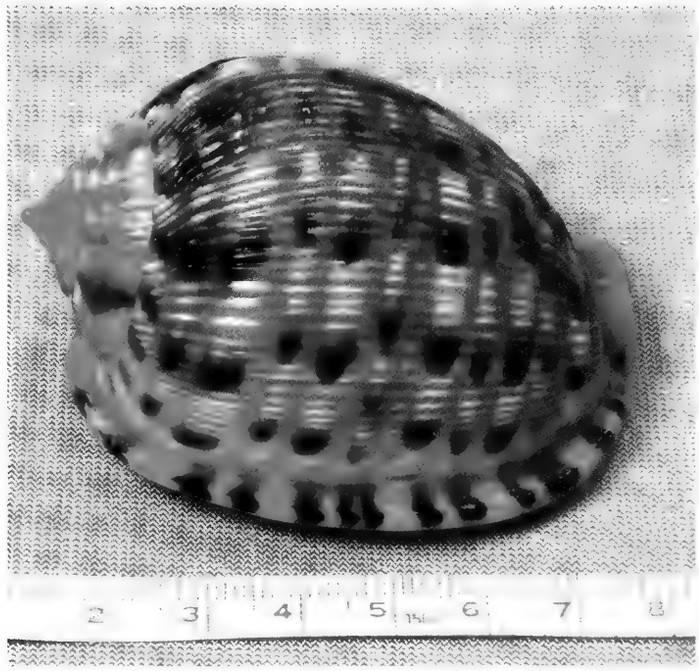
List of Grenada Species - 2009

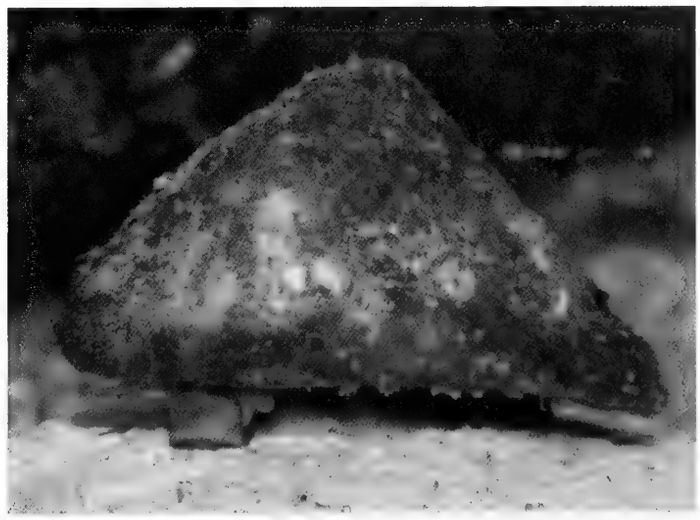
Compiled by Tom Watters

Arcidae	*Anadara notabilis* (Röding, 1798)
	Arca imbricata Bruguière, 1789
	Arca zebra (Swainson, 1833)
	Barbatia cancellaria (Lamarck, 1819)
Barleeidae	*Barleeia mexicana* Rolán & Crúz-Abrego, 1998
Batillariidae	*Batillaria minima* (Gmelin, 1791)
Buccinidae	*Engina turbinella* (Kiener, 1835)
	Gemmophos sp.
	Gemmophos tinctus (Conrad, 1846)
	Pisania pusio (Linnaeus, 1758)
Bullidae	*Bulla occidentalis* Adams, 1850
Caecidae	*Caecum antillarum* Carpenter, 1858
	Caecum cf. *breve* de Folin, 1867
	Caecum plicatum Carpenter, 1858
	Caecum pulchellum Stimpson, 1851
	Caecum regulare Carpenter, 1858
	Caecum sp.
	Caecum textile de Folin, 1867
	Meioceras nitidum (Stimpson, 1851)
Camaenidae	*Polydontes perplexa* (Férussac, 1821)
Cardiidae	*Americardia media* (Linnaeus, 1758)
	Laevicardium vitellinum (Reeve, 1844)
	Papyridea soleniformis (Bruguière, 1789)
	Trachycardium isocardia (Linnaeus, 1758)
	Trachycardium magnum (Linnaeus, 1758)
Cassidae	*Cypraecassis testiculus testiculus* (Linnaeus, 1758)
Cerithiidae	*Bittiolum varium* (Pfeiffer, 1840)
	Cerithium lutosum Menke, 1828
	Cerithium muscarum Say, 1822
Cerithiopsidae	*Cerithiopsis* sp. Redfern 296
	Joculator academicorum (Rolan & Espinosa, 1996)
	Seila sp. Redfern 313
Chaetopleuridae	*Calloplax janeirensis* (Gray, 1828)
Chamidae	*Chama macerophylla* Gmelin, 1791
Chitonidae	*Acanthopleura granulata* (Gmelin, 1791)
Columbellidae	*Astyris lunata* (Say, 1826)
	Columbella dysoni Reeve, 1858
	Columbella mercatoria (Linnaeus, 1758)
	Mitrella ocellata (Gmelin, 1791)
	Steironepion monilifera (Sowerby, 1844)
	Steironepion pygmaeus (C.B. Adams, 1850)
	Suturoglypta pretrii (Duclos, 1846)
	Zafrona pulchella (de Blainville, 1829)
Condylocardiidae	*Carditopsis smithii* (Dall, 1896)
Conidae	*Conus* cf. *cedonulli* Linneaus, 1767
	Conus jaspideus Gmelin, 1791
	Conus mus Hwass, 1792
	Conus puncticulatus Hwass, 1792
Corbulidae	*Caryocorbula chittyana* (C.B. Adams, 1852)
Costellariidae	*Vexillum puella* (Reeve, 1845)
Cryptoplacidae	*Acanthochitona pygmaea* (Pilsbry, 1893)
	Cryptoconchus floridanus (Dall, 1889)
Cypraeidae	*Luria cineria* (Gmelin, 1791)
Cystiscidae	*Gibberula* sp. Redfern 268
	Granulina hadria (Dall, 1889)
	Persicula pulcherrima (Gaskoin, 1849)
	Pugnus serrei (Bavay, 1911)
Dentaliidae	*Antalis antillarum* (d'Orbigny, 1842)
Eulimidae	*Eulimostraca* sp. Redfern 339
	Melanella sp.
	Nanobalcis sp.
	Vitreobalcis sp.
	Vitreolina sp.
Fasciolariidae	*Leucozonia nassa* (Gmelin, 1791)
	Leucozonia ocellata (Gmelin, 1791)
Fissurellidae	*Diodora cayenensis* (Lamarck, 1822)
	Diodora dysoni (Reeve, 1850)
	Diodora listeri (d'Orbigny, 1842)
	Diodora variegata Sowerby, 1862
	Fissurella angusta (Gmelin, 1791)
	Fissurella barbadensis (Gmelin, 1791)
	Fissurella rosea (Gmelin, 1791)
	Hemitoma octoradiata (Gmelin, 1791)
	Lucapina suffusa (Reeve, 1850)
Hipponicidae	*Hipponyx antiquatus* (Linnaeus, 1767)
Ischnochitonidae	*Ischnochiton papillosus* (C.B. Adams, 1845)
	Ischnochiton striolatus (Gray, 1828)
	Stenoplax purpurascens (C.B. Adams, 1845)
Isognomonidae	*Isognomon alatus* (Gmelin, 1791)
	Isognomon radiatus (Anton, 1839)
Limidae	*Lima caribaea* (d'Orbigny, 1853)
Littorinidae	*Cenchritis muricatus* (Linnaeus, 1758)
	Echinolittorina dilatata (d'Orbigny, 1842)
	Echinolittorina riisei (Mörch, 1876)
	Echinolittorina ziczac (Gmelin, 1791)
	Littoraria scabra angulifera (Lamarck, 1822)
	Littoraria nebulosa (Lamarck, 1822)
Lottiidae	*Patelloida pustulata* (Helbling, 1779)
	Tectura antillarum (Sowerby, 1831)
Lucinidae	*Codakia orbicularis* (Linnaeus, 1758)
	Codakia orbiculata (Montagu, 1808)
	Parvilucina costata (d'Orbigny, 1846)
Marginellidae	*Volvarina avena* (Kiener, 1834)
Megalobulimidae	*Megalobulimus oblongus* (Müller, 1774)
Melampodidae	*Pedipes mirabilis* (Mühlfeld, 1816)
Melongenidae	*Melongena melongena* (Linnaeus, 1758)
	Pugilina morio (Linnaeus, 1758)
Mitridae	*Mitra nodulosa* (Gmelin, 1791)
Modulidae	*Modulus modulus* (Linnaeus, 1758)
Muricidae	*Chicoreus brevifrons* (Lamarck, 1822)
	Favartia cellulosa (Conrad, 1846)
	Mancinella deltoidea (Lamarck, 1822)
	Muricopsis caribbaea (Bartsch & Rehder, 1939)
	Murexsul oxytatus (M. Smith, 1938)
	Phyllonotus pomum (Gmelin, 1791)
	Purpura patula (Linnaeus, 1758)
	Stramonita haemastoma floridana (Conrad, 1837)
	Trachypollia nodulosa (C.B. Adams, 1845)
Mytilidae	*Brachiodontes exustus* (Linnaeus, 1758)
	Brachiodontes modiolus (Linnaeus, 1767)
Nassariidae	*Nassarius ambiguus* (Pulteney, 1799)
	Nassarius polygonatus (Lamarck, 1822)
Neritidae	*Nerita tessellata* Gmelin, 1791
	Nerita versicolor Gmelin, 1791
	Smaragdia viridis (Linnaeus, 1758)
Noetiidae	*Arcopsis adamsi* (Dall, 1886)
Nuculidae	*Nucula* sp.
Olivellidae	*Jaspidella jaspidea* (Gmelin, 1791)
	Olivella acteocina Olsson, 1951
	Olivella nivea (Gmelin, 1791)
	Olivella sp.

Orthalicidae	*Bulimulus guadeloupensis* (Bruguière, 1789)
Ostreidae	*Ostreola equestris* (Say, 1834)
Ovulidae	*Cyphoma gibbosum* (Linnaeus, 1758)
	Cyphoma mcgintyi Pilsbry, 1939
Pachychilidae	*Pachychilus* sp.
Pectinidae	*Bractechlamys antillarum* (Récluz, 1853)
	Caribachlamys ornata (Lamarck, 1819)
Phasianellidae	*Eulithidium adamsi* (Philippi, 1853)
	Eulithidium affinis affinis (C.B. Adams, 1850)
	Eulithidium thalassicola Robertson, 1958
	Eulithidium bellum (M. Smith, 1937)
	Eulithidium tessellatum (Potiez & Michaud, 1838)
Pinnidae	*Pinna carnea* Gmelin, 1791
Planaxidae	*Hinea lineata* (da Costa, 1778)
	Supplanaxis nucleus (Bruguière, 1789)
Pleurobranchidae	*Pleurobranchus areolatus* Mörch, 1863
Potamididae	*Cerithidea costata* (da Costa, 1778)
Psammobiidae	*Asaphis deflorata* (Linnaeus, 1758)
	Heterodonax bimaculatus bimaculatus (L., 1758)
Pteriidae	*Pinctada imbricata* Röding, 1798
Pyramidellidae	*Chrysallida nioba* (Dall & Bartsch, 1911)
	Ividia havanensis (Pilsbry & Aguayo, 1933)
	Odostomia sp. De Jong & Coomans 642
	Pseudoscilla babylonia (C.B. Adams, 1845)
	Sayella laevigata (C.B. Adams, 1850)
	Turbonilla hemphilli Bush, 1899
	Turbonilla puncta (C.B. Adams, 1850)
	Turbonilla pupoides (d'Orbigny, 1842)
	Turbonilla sp. Redfern 618
Ranellidae	*Cymatium nicobaricum* (Röding, 1798)
Retusidae	*Volvulella persimilis* (Mörch, 1875)
Rissoellidae	*Rissoella caribaea* Rehder, 1943
Rissoidae	*Alvania* cf. *deboeri* De Jong & Coomans, 1988
	Alvania faberi De Jong & Coomans, 1988
	Alvania meridioamericana Weisbord, 1962
	Manzonia caribaea (d'Orbigny, 1842)
	Rissoina striosa (C.B. Adams, 1850)
	Schwartziella bouryi (Desjardin, 1949)
	Schwartziella bryerea (Montagu, 1803)
	Schwartziella catesbyana (d'Orbigny, 1842)
	Zebina browniana (d'Orbigny, 1842)
Semelidae	*Ervilia subcancellata* E.A. Smith, 1885
	Semele proficua (Pulteney, 1799)
Skeneidae	*Parviturbo comptus* (Woodring, 1928)
	Parviturbo weberi Pilsbry & McGinty, 1945
Stomatellidae	*Synaptocochlea picta* (d'Orbigny, 1842)
Strombidae	*Strombus costatus* Gmelin, 1791
	Strombus gigas Linnaeus, 1758
	Strombus pugilis Linnaeus, 1758
	Strombus raninus Gmelin, 1791
Subulinidae	*Lamellaxis mauritiana* (Pfeiffer, 1852)
	Subulina octona (Bruguiere, 1789)
Succineidae	*Succinea* cf. *latior* C.B. Adams, 1849
Tellinidae	*Arcopagia fausta* (Pulteney, 1799)
	Tellinella listeri (Röding, 1798)
Thiaridae	*Melanoides tuberculata* (Müller, 1774)
Tonnidae	*Tonna pennata* (Morch, 1852)
Tornidae	*Cochliolepis parasitica* Stimpson, 1858
Triviidae	*Niveria pediculus* (Linnaeus, 1758)
Trochidae	*Cittarium pica* (Linnaeus, 1758)
	Tegula fasciata (Born, 1778)
	Tegula gruneri (Philippi, 1849)
Turbinellidae	*Vasum capitellum* (Linnaeus, 1758)
Turbinidae	*Astralium phoebium* (Röding, 1798)
	Lithopoma caelatum (Gmelin, 1791)
	Lithopoma tectum tectum (Lightfoot, 1786)
	Marevalvata tricarinata (Stearns, 1872)
	Turbo castanea Gmelin, 1791
Turridae	*Agathotoma candidissima* (C.B. Adams, 1845)
	Crassispira apicata (Reeve, 1845)
	Crassispira fuscescens (Reeve, 1843)
	Pilsbryspira albocincta (C.B. Adams, 1845)
	Pilsbryspira leucocyma (Dall, 1884)
Vanikoridae	*Vanikoro sulcata* (d'Orbigny, 1842)
Veneridae	*Chione cancellata* (Linnaeus, 1767)
	Gouldia cerina (C.B. Adams, 1845)
	Protothaca granulata (Gmelin, 1791)
Vermetidae	*Petaloconchus* sp. Redfern 214
	Petaloconchus sp. Redfern 215
Vitrinellidae	*Teinostoma clavium* Pilsbry & McGinty, 1945
Volutidae	*Voluta musica* Linnaeus, 1758



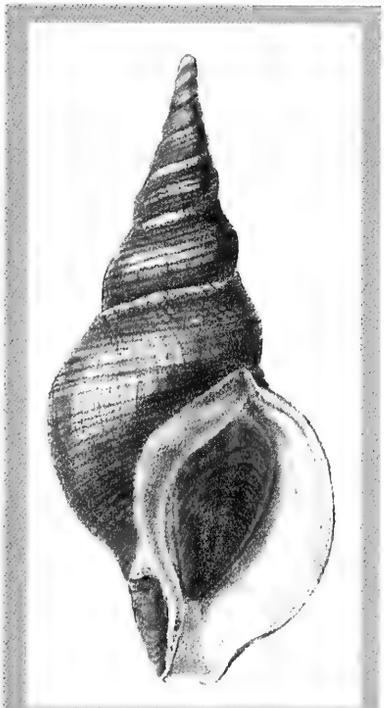
Above: *Cypraecassis testiculus* found by Linda Brunner. Is this a big one? You bet. Abbott & Dance's "Compendium of Seashells" lists the maximum size as 2.5 inches. Photo by author. Below: a small *Hemitoma octoradiata* showing some interesting color in the animal. Photo by Peggy Williams.



Jumala and the 'Eyeless Hitler Beetle'

by S. Peter Dance

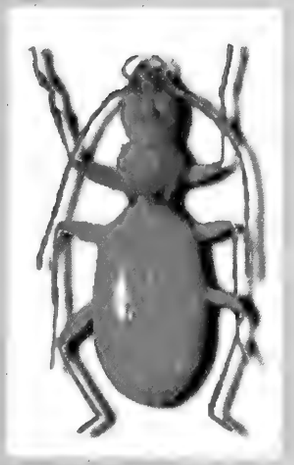
In 1882 Hermann Friele, a Norwegian zoologist, proposed the name *Jumala* for a genus of large, whelk-like gastropods in the family Buccinidae (type species *Fusus turtoni* Bean, 1834). His choice of a name proved to be contentious because Jumala is the Lapp (i.e. Finnish) word for the Christian God. In 1893, therefore, Friele, substituted the scientific name *Jumala* with the less euphonious name *Ukko* (meaning "God of Thunder" in Finnish folk religion). Forthwith *Jumala* was expunged from scientific nomenclature, or so it was thought. In 1931 Johannes Thiele listed it as a synonym of *Beringius*.[1] Ten years later, however, Wilhelm Wenz resurrected it as a genus in its own right.[2]



***Fusus turtoni* Bean, 1834, type species of *Jumala* Friele, 1882. The species is now placed in the genus *Beringius* Dall, 1886. The adult shell normally attains a length of about 80mm. From the 5th volume (1869) of *British Conchology* by J. G. Jeffreys.**

In 1957 *Jumala* surfaced again, in a report published by the International Commission on Zoological Nomenclature, the London-based organisation that adjudicates on scientific names applied to animals.[3] The Commission had received the following application: "Request for the suppression of the generic name 'Jumala' Friele, 1882 (Class Gastropoda) on the ground that it consists of a word, the use of which as such is calculated to give offence on religious grounds." This was the first time the Commission had received such a request and so it was debated with more than usual thoroughness. Friele, after all, had proposed *Jumala* in good faith and a scientific name for an animal, once published, cannot be rejected, even by the author himself, no matter how inappropriate it may be. In 1957, however, the Commission decided to reject the name.

In 1974 the late R. Tucker Abbott voiced a contrary opinion. "The name *Jumala* Friele, 1882," he said, "was rejected by the International Commission (Opinion 469, 1957) on the quaint grounds that it was blasphemous. However, the word means Jehovah or Maker and does honour to God."[4] The Commission also decided to replace *Jumala* with *Beringius*, a generic name proposed by William Healey Dall in 1886. By choosing a name honouring the Danish navigator, Vitus Bering, in preference to one honouring the Christian God, it seems that the Commission may have been guilty of allowing a misguided religious sensibility to influence its decision. On the other hand, it seems there are no grounds to prevent the continued use of a scientific name for a creature named in honour of someone almost universally despised and vilified.



The "eyeless Hitler beetle," *Anophthalmus hitleri* Scheibel, 1937. A mere 5.5mm long, this blind beetle is known only from five humid caves in Slovenia.

In 1933 Oscar Scheibel, an amateur entomologist from Zagreb, acquired a blind beetle discovered in a cave system in Slovenia (then part of Yugoslavia). An enthusiastic supporter of the Nazis, Scheibel described it as new to science in 1937, christening it *Anophthalmus hitleri*. It mattered not that he had given the name of his hero to a blind insect less than half an inch in length.[5] Diminutive and sightless it may be, but Neo-Nazis and those willing to deal with them have become so keen to acquire a beetle bearing the name of the man who is their hero, that specimens have been changing hands for hundreds of euros apiece. Outside of Neo-Nazi circles, however, the continued use of the scientific name of the "eyeless Hitler beetle" could be seen as "calculated to give offence." As the name has no overtly religious connotations, however, the International Commission on Zoological Nomenclature is unlikely to receive or to consider a request to ban it because of its nominal association with Adolf Hitler. Like that of the evil-doer it honours, the name of this insignificant insect, may be with us evermore. Not so *Jumala*, a name proposed in good faith, that "does honour to God." Now, suppose for a moment that Oscar Scheibel had been a conchologist ... but perhaps we should not to go too far down that hypothetical road!

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[1] J. Thiele, 1931. *Handbuch der systematischen Weichtierkunde*, Vol. 1, p. 306.
[2] W. Wenz, 1941. In O. H. Schindewolf, *Handbuch der Paläozoologie. Gastropoda*, Part 1, *Prosobranchia*, p. 1153.
[3] The International Commission on Zoological Nomenclature. 1957. *Opinions and Declarations Rendered by* ... Opinion 469. Rejection of the generic name *Jumala* Friele, 1882 & c. Vol. 16, Part 8, pp. 97-128.
[4] R. T. Abbott, 1974. *American Seashells*, 2nd edition, p. 207.
[5] O. Scheibel, 1937. Ein neuer Anophthalmus aus Jugoslawien. *Entomologische Blätter*, Vol. 33, pp 438-40.

Haliotis rugosa Lamarck, 1822: A Confusing and Little Known Abalone From the Indian Ocean - A Brief Description and Photo Study

By Buzz Owen

In this article I will continue a discussion begun in *Of Sea And Shore* of some of the lesser known *Haliotis* species with an examination of *Haliotis rugosa* Lamarck, 1822 (non Reeve, 1846), a species found on Réunion and Mauritius. These two island groups are located in the southwest Indian Ocean, not far from Madagascar (*H. rugosa* is not distributed, so far as is known, on Madagascar itself).

A number of junior synonyms exist for *H. rugosa*, the most frequently encountered in the literature being *H. revelata* Deshayes, 1863. There are two morphological variants (with stronger spiral ribs) that have been described as *H. alternata* Reeve, 1846, and *H. nebulata* Reeve, 1846. Additionally, as many as four of the seven specimens of the contentious taxon *H. multiperforata* Reeve, 1846 (in the BMNH type and general collection), appear to represent *H. rugosa*.

There is also confusion about its relationship to *H. pustulata* Reeve, 1846, and the possibility of synonymy or subspecies status exists (Herbert, 1990; Geiger, 1996; 1998; Geiger and Poppe, 2000). In brief, it is a most confusing taxon indeed! I tend to share the opinion of Daniel Geiger, that it is not synonymous with *H. pustulata*. I am not aware of any work comparing epipodial morphology of the two, or better, DNA studies. This would almost certainly clarify this issue and put the question behind us once and for all.

Four color plates are used here to illustrate 31 specimens of *H. rugosa*; additionally, eight specimens of *H. pustulata* from Mozambique are included as a comparison. One of the specimens from Mauritius, previously identified as *H. multiperforata* in the general collection of the BMNH, is also included (Pl. 4). This particular example of that taxon definitely represents *H. rugosa*. The type of *H. multiperforata* and one of the two specimens which have "Mus. Cumings" on their data tags (listed as "paralectotypes" by Daniel Geiger [1998a]) are also included (Pl. 1). These three shells have no locality data and their synonymy with *H. rugosa* seems somewhat less clear: the type specimen has 10 open tremata (*H. rugosa* typically has five or six) and one of the two paralectotypes possesses spiral ribs that are narrower and less flattened, more like those typically found in *H. pustulata*. A future report is planned that will explore all seven specimens that have thus far been located in the BMNH collection and are identified as *H. multiperforata*.

Description of *H. rugosa*: The following is an excellent description taken from *A Conchological Iconography: Family Haliotidae* by Daniel Geiger and Guido Poppe (2000): "*Shell small (to 56mm), oblong, light to medium weight, depressed, hardly arched, somewhat convex. Anterior margin straight to slightly curved. Spire low, to somewhat elevated, visible in ventral view. Holes (tremata) slightly larger than average, round, slightly raised, usually 5-6 open. Dorsal surface very distinct yet low, square-profile, spiral cords differing in width up to three-fold, cords often more pronounced and more tightly spaced close to suture, with irregular radial growth marks. Columella wide. Coloration variable; most frequently sepia to dark olive-green base color with sharp transitions to sand and cream blotchy markings with superimposed tenting. Color pattern also with water-color-like transitions. Nacre bright white. No muscle scar.*"

Now, with the thought that sometimes "one picture is worth a thousand words," over 40 specimens of *H. rugosa* are illustrated, along with locality data, together with the type specimens of the two synonyms *H. alternata* and *H. nebulata*. Completing this pictorial comparison, several specimens of *H. pustulata* are included. I hope that in the future, more work with the animals will resolve the relationship between *H. pustulata* and *H. rugosa*.

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Lamarck, J. B.P. 1822. Histoire naturelle des animaux sans vertebres. 6 (2): 1-232.

Reeve, L. 1846. Monograph of the Genus *Haliotis. Conchologica Iconica: or, Illustrations of the Shells of Molluscous Animals*, London: L. Reeve & Co., 1843-1878, pp. 22, 17 pls.

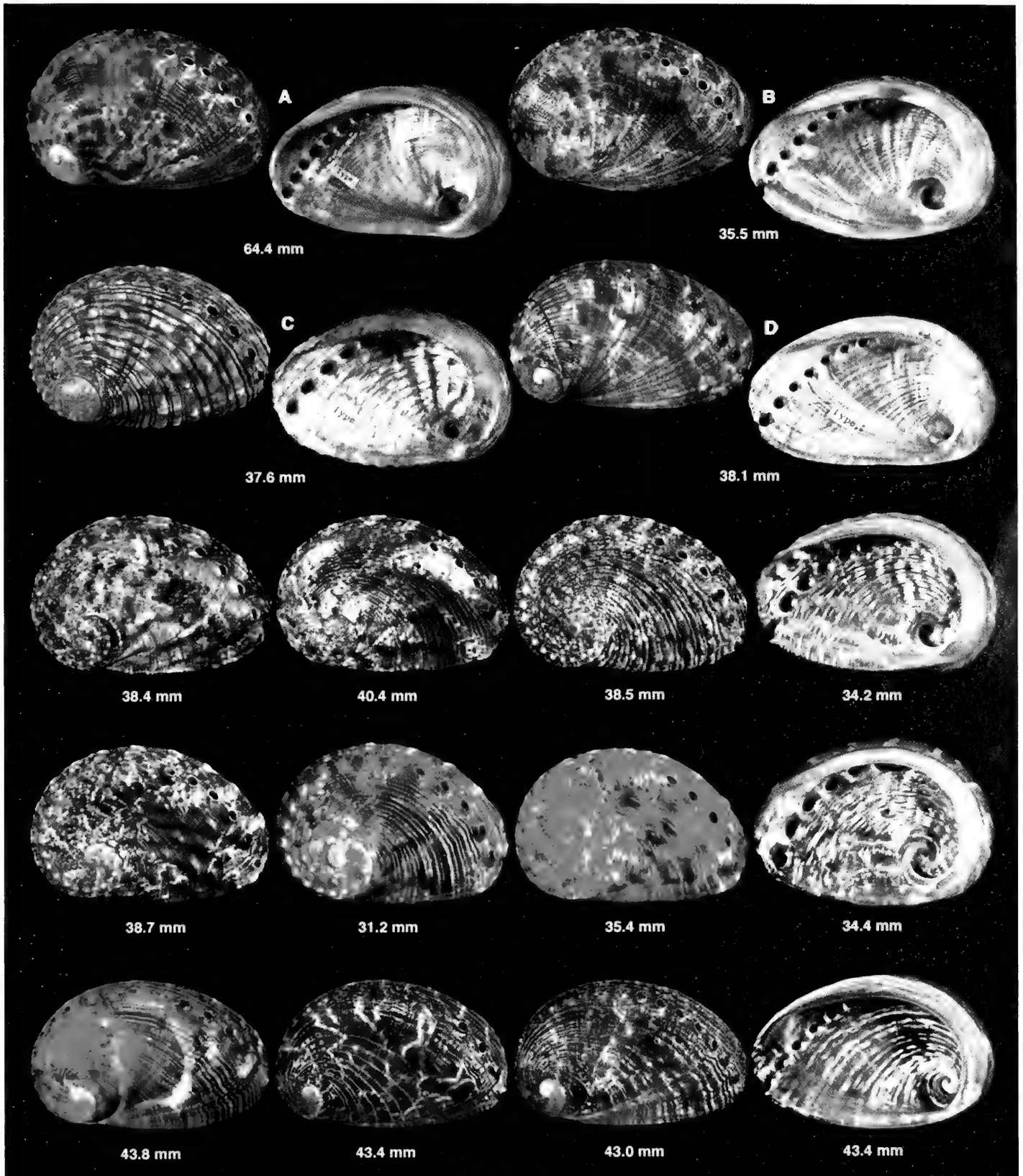


Plate 1

Top Row: *H. multiperforata* Reeve, 1846. A: Type; B: Paralectotype. Hab. ?
2nd Row: C: *H. alternata* Sowerby, 1882. Mozambique ?. D: *H. nebulata* Reeve, 1846. Type. Hab. ?
Rows 3-4: *H. pustulata* Reeve, 1846. Mozambique. 5-10 m.
Bottom Row: *H. rugosa* Lamarck, 1822. Réunion Is. 5-10 m.

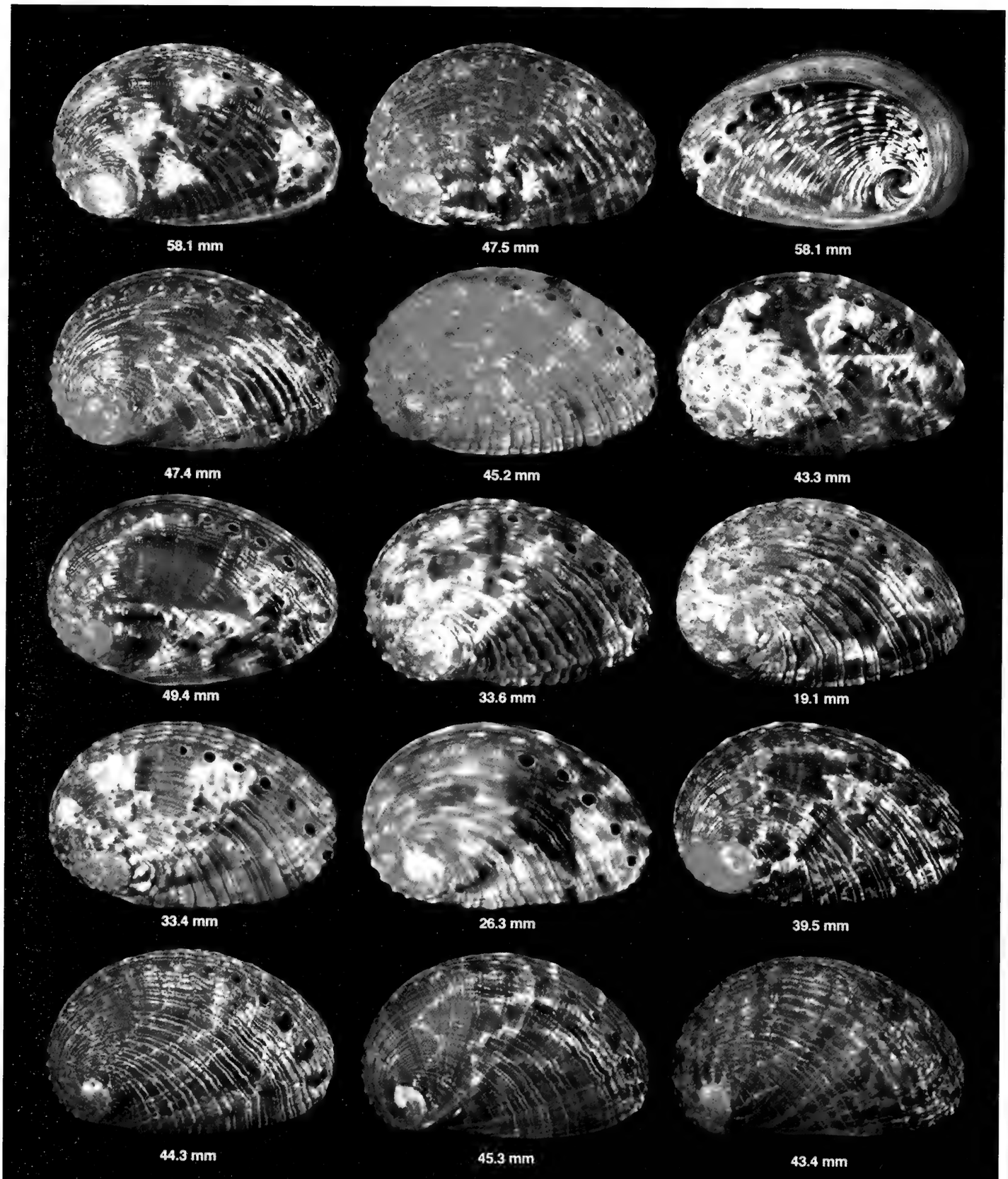


Plate 2

Top 4 Rows: *Haliotis rugosa* Lamarck, 1822. Mauritius. 5-10 m.
Bottom Row: *Haliotis rugosa*. Réunion Island. 5-10 m.

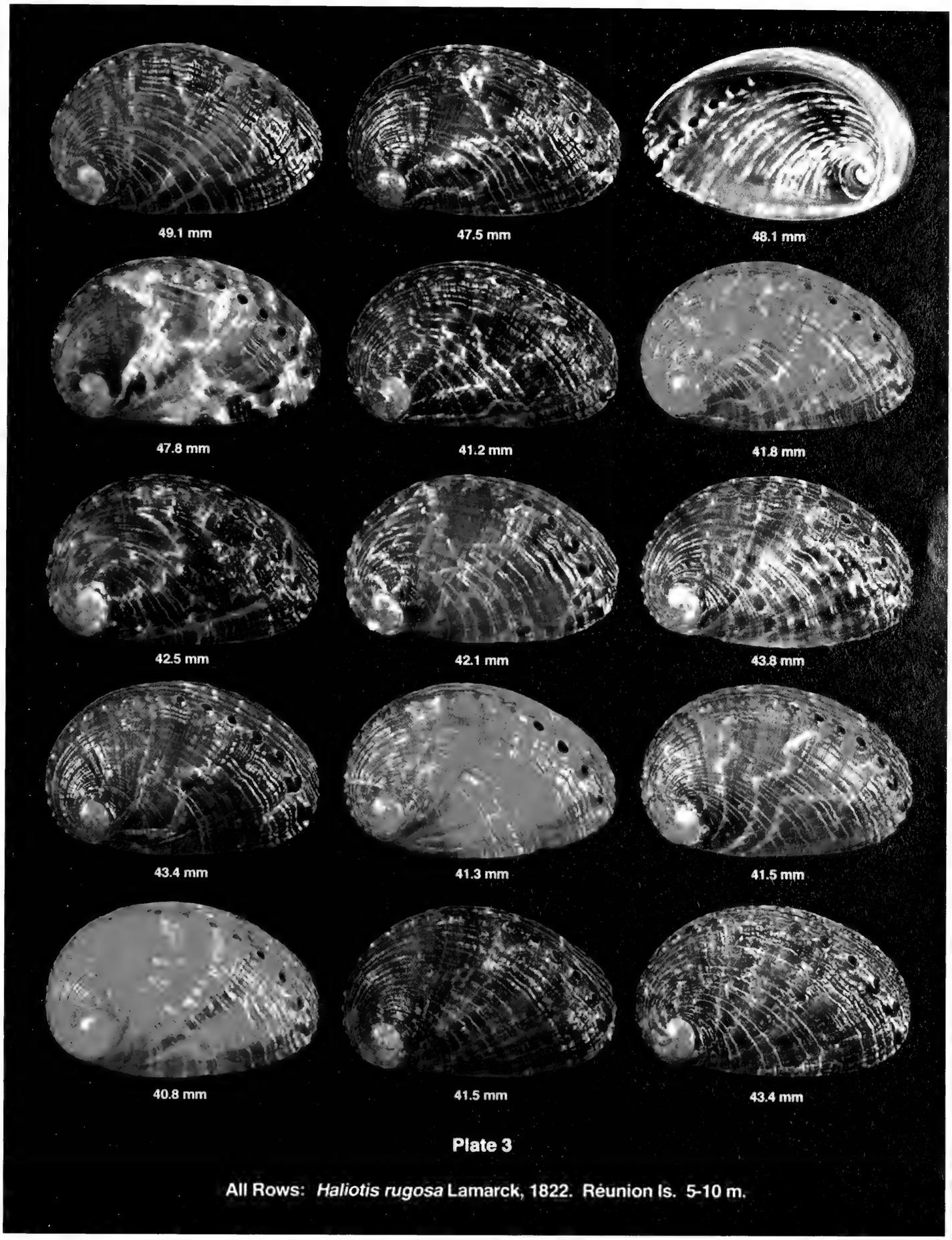


Plate 3

All Rows: *Haliotis rugosa* Lamarck, 1822. Réunion Is. 5-10 m.

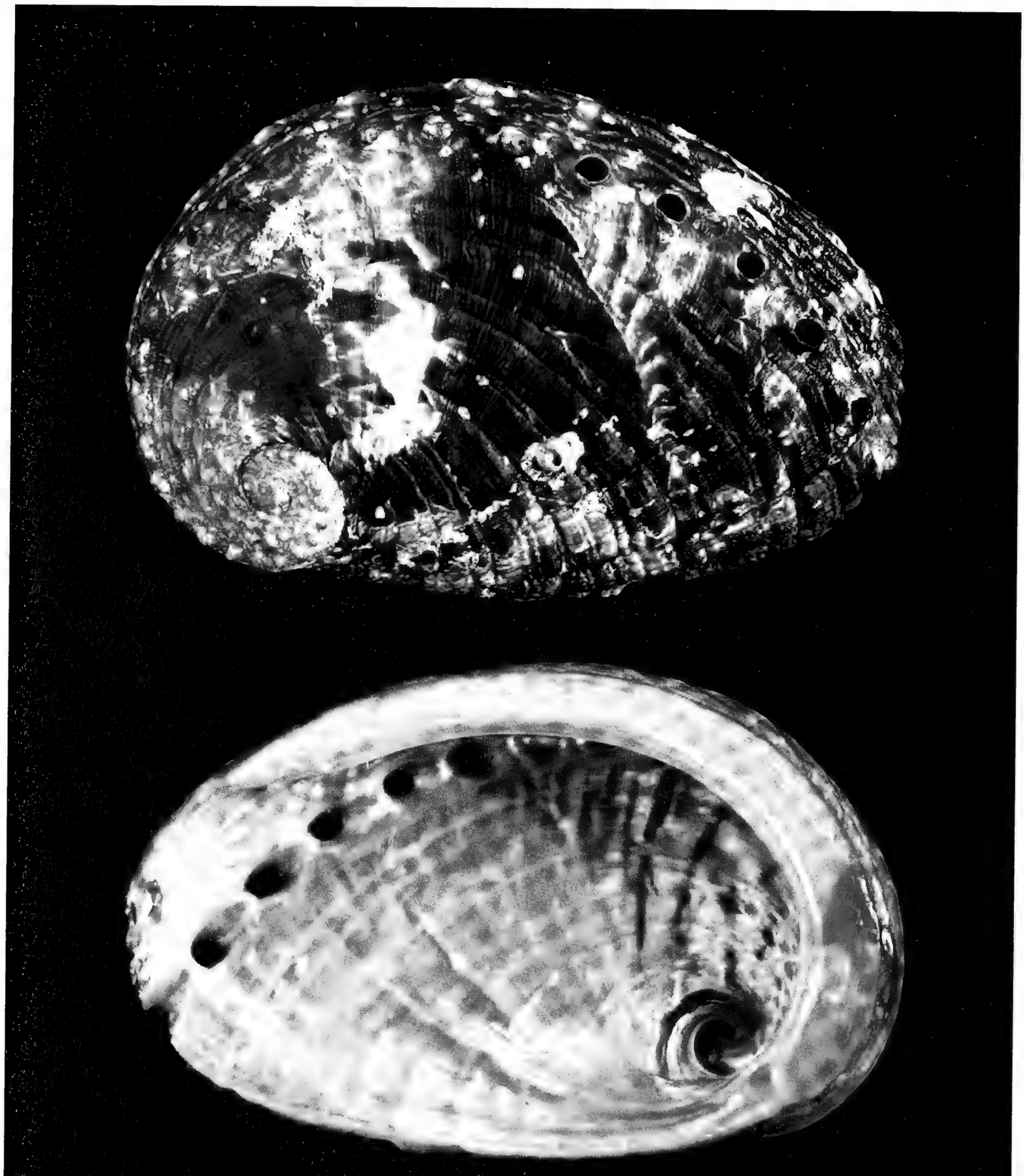


Plate 4

Haliotis multiperforata Reeve, 1846. Mauritius. 53.0 mm. General Collection. BMNH. (= *H. rugosa* Lamarck, 1822).

Report on the Epitoniidae of the East China Sea

By Lenny Brown

The East China Sea is a section of the Pacific Ocean bordered on the west by China, on the east by the Ryukyu and Kyushu Islands, on the south by Taiwan, and the north by the Yellow Sea.

A review of the literature on Epitoniidae, my area of research interest, turned up a relatively short list of Recent epitoniid species that were described based on material from the China Sea *s.l.*, an area that includes the East China Sea.

G. B. Sowerby, II, 1844 described *Scalaria magnifica* [=*Amaea magnifica*] and *Scalaria obliqua* [=*Epitonium obliquum*] based on specimens from the China Sea. A. Adams & Reeve (1848-1850) described four species of epitoniids from the China Sea, *Scalaria eximia* [=*Epitonium eximium*], *Scalaria maculosa* [=*Epitonium glabratum* (Hinds, 1844)], *Scalaria neglecta* [=*Epitonium pallasi neglecta*], and *Eglisia tricarinata.* E. de Boury described two species of epitoniids from the China Sea, *Scala* (*Discoscala*) *edgari* de Boury, 1912 [=*Cirsotrema edgari*] and *Scala* (*Foliaceiscala*) *grossicingulata* de Boury, 1913 [=*Amaea grossicingulata*]. Azuma (1972) described *Fragilopalia nebulodermata* from the South China Sea. Lee & Wu (1998) described *Epitonium taiwanica* from off Paratas Island in the South China Sea and *Epitonium chinglinae* from off Kueishan Island in the East China Sea. Lee (2001) described *Amaea flammea*, *Amaea rubigosola* and *Epitonium duocamurum* from off Kueishan Island in the East China Sea.

With the exception of the species listed above, it appears that relatively little was known about the Epitoniidae found in this part of the Pacific. That started to change in 2006 when shell dealers in China began selling shells that were trawled from the offshore waters of the East China Sea.

I have been systematically acquiring examples of the epitoniids found in this region in order to begin documenting the species found in this section of the Pacific. Bruce Neville also collected epitoniids from the East China Sea. These two collections, together with photographs of epitoniid species from the East China Sea, form the basis for this report. Voucher specimens for all the illustrated species and a number of species that were not illustrated are in the Brown or Neville collections.

It is important to note that this is only a very preliminary report and that further collecting will undoubtedly document additional epitoniid species not included on this list. It is also important to note that the East China Sea encompasses an area of more than 750 thousand square km. While dealers provide information of the depths at which species were trawled, they usually do not provide information on where in the East China Sea their material was collected.

Species List

Acirsa chitaniana (Yokoyama, 1926) (**Fig. 1**) There is much uncertainty regarding the proper name for this species and some authors call it *A. martensi* (de Boury, 1913). Kuroda, *et. al.*

(1971:247) listed *A. martensi* (de Boury, 1913) as a synonym of *A. chitaniana* without comment. Nakayama (2003:6) noted that the holotype of *A. chitaniana* is apparently missing and that the holotype of *Scala* (*Plesioacirsa*) *martensi* was destroyed during World War II, making it impossible to compare the holotypes to determine if the two species indeed are conspecific.

Acrilla acuminata (G. B. Sowerby, II, 1844)

Alora annulata (Kuroda & Ito, 1961)

Amaea apexroseus Garcia, 2003 (**Figs. 2 & 3**) While this species was described based on a single specimen from off Noumea, New Caledonia, it has been collected off Aliguay Is., Mindanao, Philippines, and in the East China Sea. The specimen illustrated in Fig. 2 has the characteristic sculpture of this species but lacks the reddish brown apex.

Amaea flammea Lee, 2001 (**Fig. 4**) Nakayama (2003:22) noted that while this species is very similar to *A. splendida*, the basal disk is a useful shell character for distinguishing the two species. On *A. splendida* (Fig. 8), the strong costae on the body whorl continue across the basal disk and are noticeably stronger than the spiral sculpture. On the base of *A. flammea*, the costae are noticeably lower than the spiral sculpture.

Amaea gazeoides Kuroda & Habe in Habe, 1961

Amaea grossicingulata (de Boury, 1913) (**Fig. 5**) E. de Boury (1913:183) described this species based on a single specimen from 'Amoy (mers de Chine)' [Xiamen in coastal Fujian Province].

Because of the combination of the oblong aperture, narrow umbilicus and the absence of a basal cord, this species belongs in *Filiscala* de Boury, 1911, a group Kilburn (1985:248) considers to be a subgenus in the genus *Amaea.*

Amaea (?) *kushimotensis* Nakayama, 2000 (**Fig. 6**) While I follow Nakayama (2000:281) in placing this species in the genus *Amaea*, I believe it is more correct to place this species in the genus *Cirsotrema* because it appears to be closely related to *Cirsotrema peltei* (Viader, 1938) found off Mauritius and *Cirsotrema vulpinum* (Hinds, 1844) found off the west coast of Panama.

Amaea magnifica (G. B. Sowerby, II, 1844)

Amaea martinii (Wood, 1828)

Amaea percancellata Nakayama, 2000 (**Fig. 7**)

Amaea (?) *rubigosola* Lee, 2001 While Lee (2001:94) placed this species in the genus *Amaea* because of the combination of raised costae and spiral cords, the genus *Epitonium* may be more appropriate for this species because it not only lacks a basal ridge, it lacks cancellate sculpture that is supposed to be characteristic in the genus *Amaea.* Furthermore, on *A. rubigosola*, the thin blade-like costae are not raised where they cross over the spiral cords, another shell character often found in species assigned to the genus *Amaea.*

Amaea splendida (de Boury, 1913) (**Fig. 8**)

Amaea (*s.l.*) *sulcata* (G. B. Sowerby, II, 1844) (**Fig. 9**)

Amaea tosaensis (Habe & Masuda, 1990) Per Higo, *et.al.* (1999:177), this species has been reported from the East China Sea.

Cirsotrema amplsum Nakayama, 2000 (**Fig. 10**)

Eglisia tricarinata A. Adams & Reeve, 1850

Epitonium amplexus Nakayama, 2003 (**Fig. 11**)

Epitonium aureomaculatum (Masahito & Habe, 1973).

Epitonium chinglinae Lee & Wu, 2001 (**Fig. 12**)

Epitonium duocamurum Lee, 2001(**Fig. 13**)

Epitonium eximium (A. Adams & Reeve, 1848) (**Fig. 14**)

Epitonium kastoroae Garcia, 2003 (**Fig. 15**) This species was described based on material from the Philippine Islands and Indonesia. The illustrated specimen extends the known range of this species north to the East China Sea.

Epitonium liliputanum (A. Adams, 1861)

Epitonium pallasii neglectum (A. Adams & Reeve, 1850)

Epitonium profundum Nakayama, 2000

Epitonium pupiforme (Masahito, Kuroda & Habe in Kuroda, *et. al.*, 1971) (**Fig. 16**)

Epitonium scalare (Linneaus, 1758)

Epitonium cf. *spyridion* Kilburn, 1985 (**Fig. 17**) Because of the combination of the open umbilicus, fenestrate sutures, peaked costae, spiral lines and fine axial lines between the costae, I am tentatively assigning the illustrated species to that described by Kilburn. There is another similar, possibly undescribed, species that occurs in the East China Sea. It differs from the illustrated species in lacking the fenestrate sutures and fine axial lines between the costae. In addition, it has more numerous costae with peaks that are much closer to the sutures.

Epitonium stigmaticum (Pilsbry, 1911)

Epitonium taiwanica Lee & Wu, 1998

Epitonium tenuiliratum (G. B. Sowerby, II, 1874) (**Fig. 18**) Sowerby (1874: Species 118) described this Japanese species as being broadly pyramidal, purple brown in color, with very close, unequal, thin reflected costae. While *E. imperiale* (G. B. Sowerby, II, 1844) is similar, it differs in having costae of equal strength, is broader and has a widely open umbilicus. Because of the costae of varying strength that are easily visible in the illustrated specimen, as well as the relatively slender profile and an umbilicus that is almost closed, I am referring the material being found in the East China Sea to *E. tenuiliratum.*

Epitonium cf. vestale (Hinds, 1844) (**Fig. 19**) I am applying this name to an epitoniid species that appears to resemble the species described by Hinds. It has an open umbilicus, 20-27 peaked costae and 20-25 spiral cords on the teleoconch whorls. Examples of this species trawled off Aliguay Island, Mindanao, Philippines, reach a maximum size of at least 27mm.

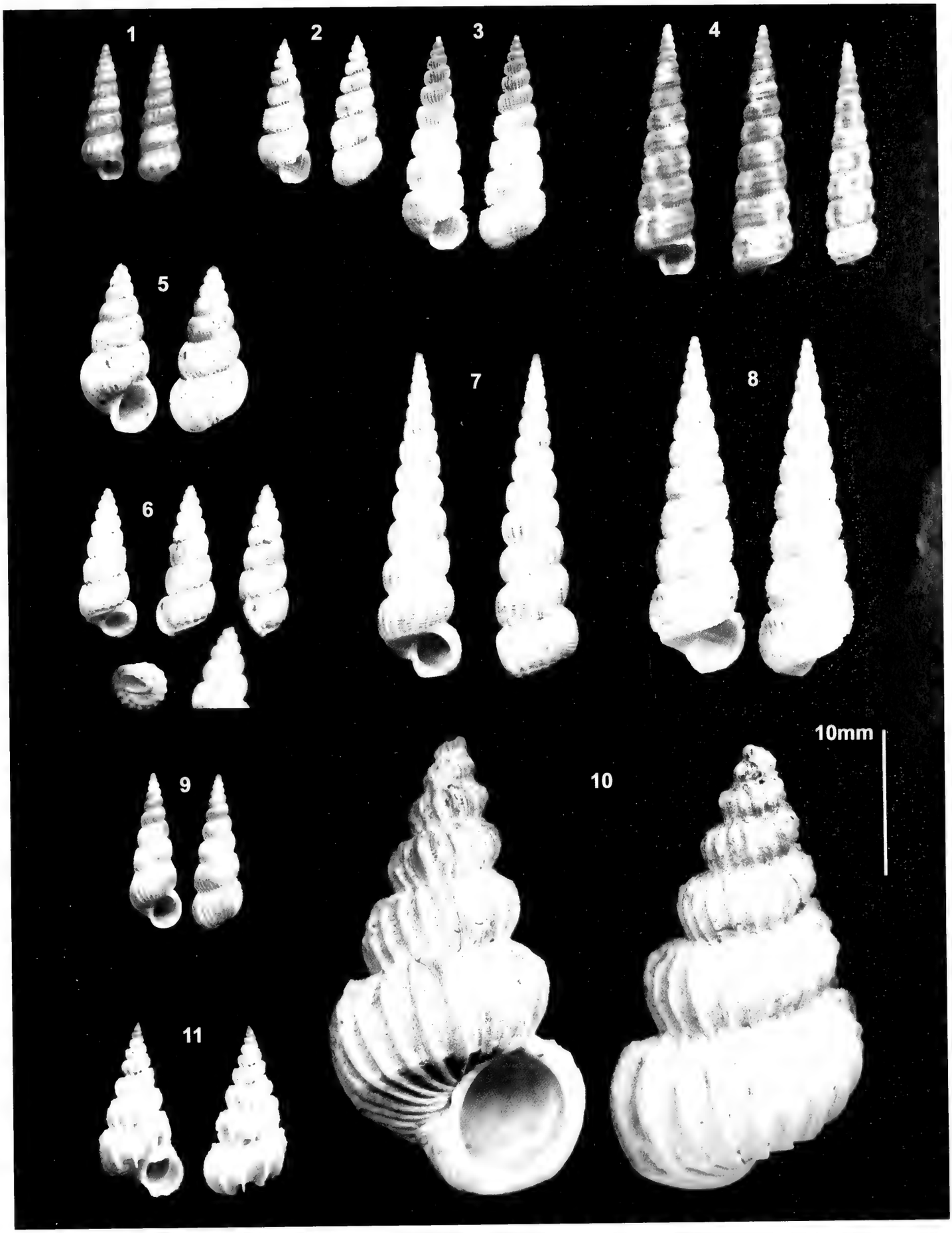
Epitonium vigintifoliatum (Masahito, Kuroda & Habe in Kuroda, *et. al.*, 1971) (**Fig. 20**) *Epitonium ' virgintifoliatum'* is a misspelling that has appeared in literature on the family.

Gregorioiscala cf. levismaculosa Garcia, 2004 (**Fig. 21**) Species in the genus *Gregorioiscala* are characterized by the combination of the pitted intriticalx, strong basal disk, low nonlamellar ribs, and sutures that are not crenulated. If the illustrated specimen is referrable to the species described by Garcia, it would extend the known range from the type locality, deep water off New Caledonia, to the East China Sea. The illustrated specimen was trawled at a depth of 280 m.

Gyroscala lamellosa (Lamarck, 1822)

Opalia monovaricosa (Kuroda & Habe in Habe, 1961) (**Fig. 22**)

Sagamiscala globosa Masahito, Kuroda & Habe, in Kuroda, *et. al.* 1971 (**Fig. 23**)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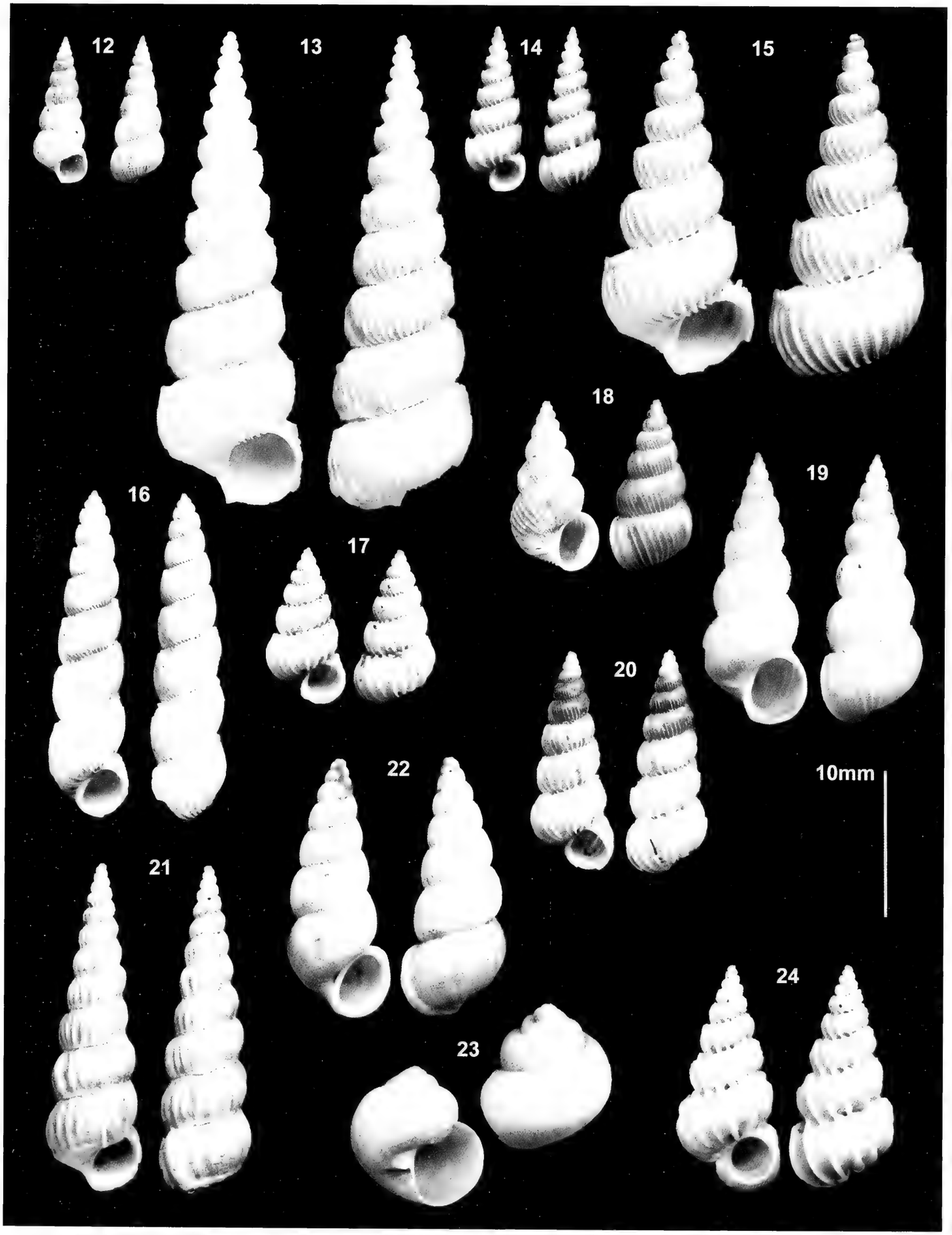
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Surrepifungium patamakanthini A. Gittenberger & E. Gittenberger, 2005 (**Fig. 24**) A. & E. Gittenberger (2005) erected the genus *Surrepifungium* for a group of epitoniid species closely associated with species of hard coral. *S. costulatum* (Kiener, 1838), *S. ingridae* (A. Gittenberger & Goud in A. Gittenberger, *et. al.*, 2000) and *S. oliverioi* (Bonfitto & Sabelli, 2001) are three other species in this newly erected genus. *S. patamakanthini* is characterized by the combination of numerous spiral lines on the early teleoconch whorls that are absent from the 6th whorl onwards and the strongly peaked costae. *S. costulatum*, a species known to occur as far north as the Kii Peninsula, Japan, resembles this species, but lacks the strongly peaked costae and the spiral sculpture on the early whorls. In addition, *S. costulatum* can reach a much larger maximum height, as much as 44mm, whereas *S. patamakanthini* reaches a maximum height of only 22.8mm. Per A. & E. Gittenberger (2005), S. *patamakanthini* is known from Madagascar, Maldives, Thailand, Philippines and Indonesia to Palau. The illustrated specimen extends the known range of this species north to the East China Sea.

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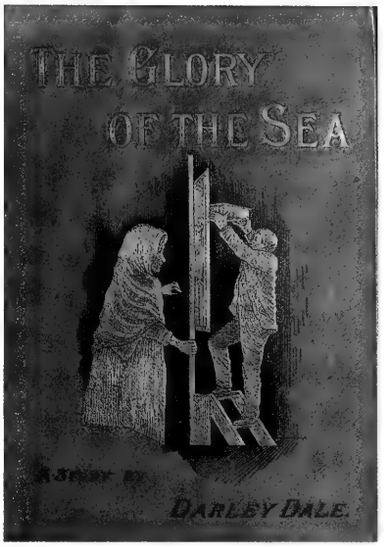
The Search for Darley Dale (and *The Glory of the Sea*)



I've always been a bookworm, as well as an avid shell-collector. I not only enjoy collecting cowries and cones, but old shell collecting books as well: the mustier, the better! I don't think I will ever break down and buy a Kindle, but the Internet has definitely become my friend. Not only can I track down old books, I recently had the odd pleasure of reading a rare, nearly unobtainable book, entirely on-line.

I'm writing a book myself, on the lore and legend of the cone shell, and the great *Conus gloriamaris* plays a hefty role in it. In my research I kept coming across references to a book titled "The Glory of the Sea" by Darley Dale. It was supposedly a novel, with *C. gloriamaris* at its core. Google Books offers a citation for it, but absolutely no text. The same for Amazon.com, Alibris, and the other used-book sites. Published in 1887, it seemed to have completely vanished. 'Darley Dale,' I did manage to learn, was a pen name for a prolific and very religious British author named Francesca Maria Steele.

Both R. Tucker Abbott and S. Peter Dance mention this work in various books. Mr. Dance gives a description in his book on the history of shell collecting. So I contacted Mr. Dance and he told me (via e-mail) that only three copies had ever passed through his hands, and it was indeed quite rare, even in Britain. I despaired of ever finding it, but then I decided to try one more tack, a nationwide library search.

Alas, one lone copy turned up, at the University of Florida of all places. The book was part of their special Baldwin Library collection of vintage children's books. Much of this collection had been digitalized and was available on-line, but "The Glory of the Sea" unfortunately, was not.

Would I now have to fly to Florida? I wrote a plaintive note to the library, asking how I could access the book without springing for airfare. To my delight, I received a reply from a Laurie Taylor, who informed me that "Glory of the Sea" would be digitalized at once, seemingly just because I asked for it! A few weeks later I had the bright blue and gold cover of the old book on my computer screen; and read the whole thing in one sitting. It's not "War and Peace," just a thin little mystery-romance centered on the alleged theft of a *Conus gloriamaris*, with a lot of lecturing about shells and shell collecting thrown in. It is charming, however, and offers an intriguing look at shell collecting in the late 19th century.

And you can read it, too. It's over 200 pages, but very quick to read. It comes complete with the cute illustrations of *C. gloriamaris* and other shells, plus a table listing common British shells. Just type this into your browser, exactly as it appears: http://www.uflib.ufl.edu/ufdc/?b=UF00091700, and see if you can guess how the stolen *C. gloriamaris* is found before the end of the book.

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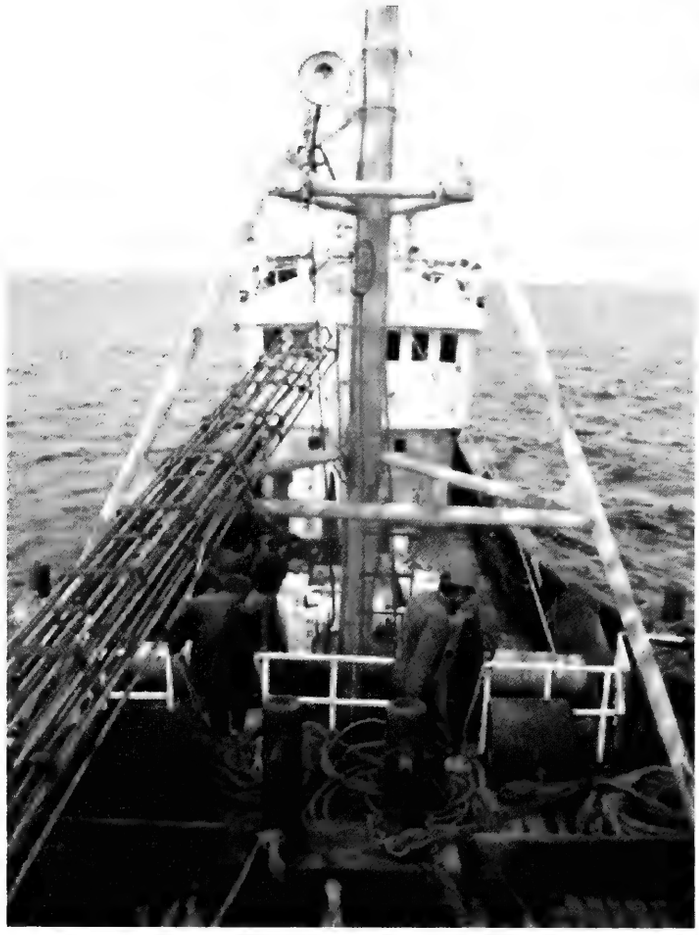
Trawling in the East China Sea

by He Jing

About ten years ago, fishermen in the Zhejiang and Fujian provinces of China began to modernize the facilities and equipment they used for fishing the East China Sea. They invested in large modern trawlers with GPS and satellite phones so they could fish beyond 300 miles offshore and trawl at depths of 200 to 500 meters. With the resultant growth in fishing output, the change in shelling has been remarkable. *Cypraea guttata* was regarded as a rare species only a dozen years ago, but now it is much easier and far less expensive to obtain quality specimens due to this change in East China Sea fishing operations. Many other shells from this region have also become much more accessible, and for the collector, more affordable.

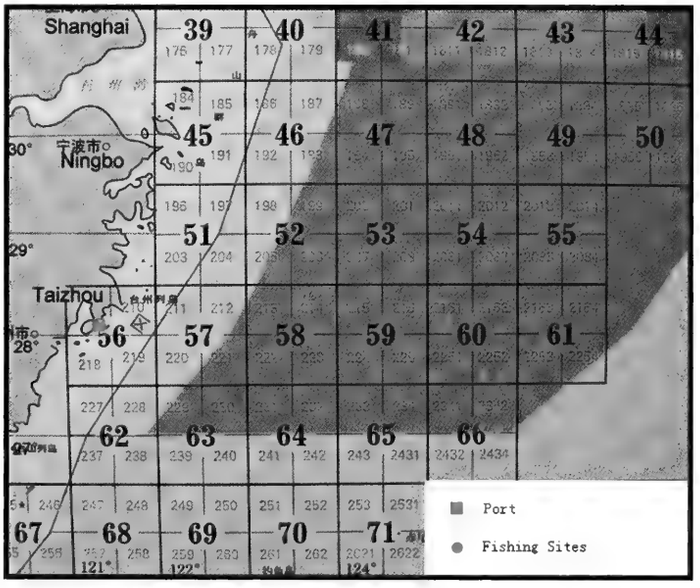
At the same time, collectors from every corner of the world voiced dissatisfaction with the lack of reliable and complete locality data for these newly accessible shells from the East China Sea. I asked many fishermen for more complete data, only to get a number of conflicting stories and confusing excuses. A primary example of this is that the fishermen will always say that any rare shell caught in the trawling nets is from very deep water. The more rare the shell, the deeper they would say the water was where it was found. In search of the truth, I decided to obtain first-hand knowledge of these fishing operations and collect data for myself. So two years ago I began planning for a trip on a fishing trawler in the East China Sea. My plan came to fruition at the end of 2008.



Heading into the East China Sea on board what was to be my home for the next 20 days. The trawler was equipped with GPS, radar, and sonar, all of which meant I was able to get complete collection data.

Above: The trawler sailed for 20 hours before the trawling began. The first trawls were not in our destined fishing area, so we continued fishing while the trawler kept sailing east. On Nov. 30th we arrived at the target fishing area.

Below: The chart of fishing blocks is issued by the Chinese government (Fisheries Division of the Ministry of Agriculture). Every boat requires a Permit of Fishing, which regulates individual fishing areas. With GPS the captain can locate the position of his boat at anytime and easily avoid fishing out of permitted fishing areas. For me, the fishing block became a great tool to mark the general location of trawled shells.



Trawling

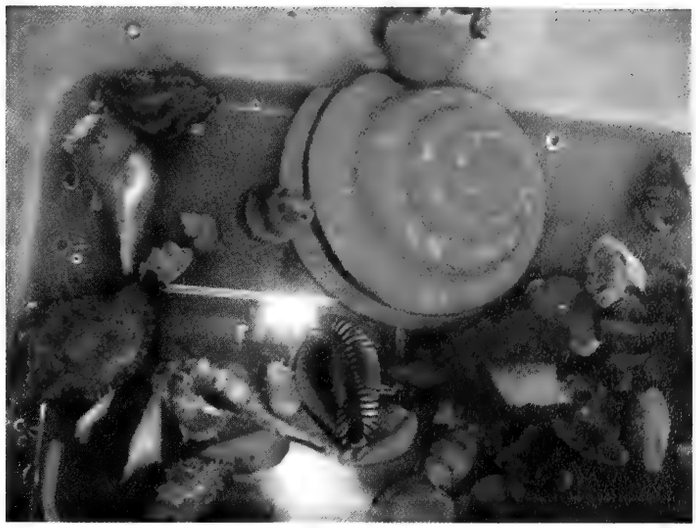
On Nov. 27th 2008, I traveled by bus to Songmen, China. Songmen is a small town in Zhejiang province, about 450km from Shanghai. Upon arrival I called the captain of the trawler to confirm the schedule for the next day, but he had second thoughts and was seemingly not willing to let me join his crew for the upcoming trip. One of his crew had recently broken his wrist in a fishing accident and the captain was worried about having an amateur on board during what could be a dangerous trip. After a long and difficult talk, the captain reluctantly accepted me for the voyage after I promised to assume any and all responsibilities for myself should anything go wrong, and most especially if I should suffer any injury.

Strong wind is common in the East China Sea in December. During the 20-day voyage the wind was grade 7-8 most times, grade 10 on two days, and grade 11 one night. [Ed. Note: these winds are given in the modern version of the Beaufort Scale. A grade 7 wind is 31-38 mph (high wind), grade 8 is 39-46 mph (gale), and grade 11 is 64-72 mph (violent storm). These are associated with wave heights that combined with the wind can make conditions quite uncomfortable.] Luckily I was a potentially good sailor and did not experience any seasickness. Through this entire trip I was able to carefully record exact collection data. On Dec 17th the fishing boat returned to port, one week later than planned.

Fishermen at work on the boat. On sunny days the fishermen would be much more patient in picking out shells while sorting fish. When it was raining heavily or extremely windy, both conditions that made the fisherman's hard job even more difficult, the crews would ignore anything but big fish.

Living Pictures

On board the trawler I set up gear to photograph any live specimens I might obtain. I filled a large steel box and several smaller plastic boxes with seawater. These became my aquariums on the trawler. Newly caught specimens were put in a box and photographed alive, some for the first time. Cassidae were some of the best subjects as they proved to be very cooperative models. They are quite active and within seconds of being introduced into the makeshift aquariums were actively exploring their new environment.



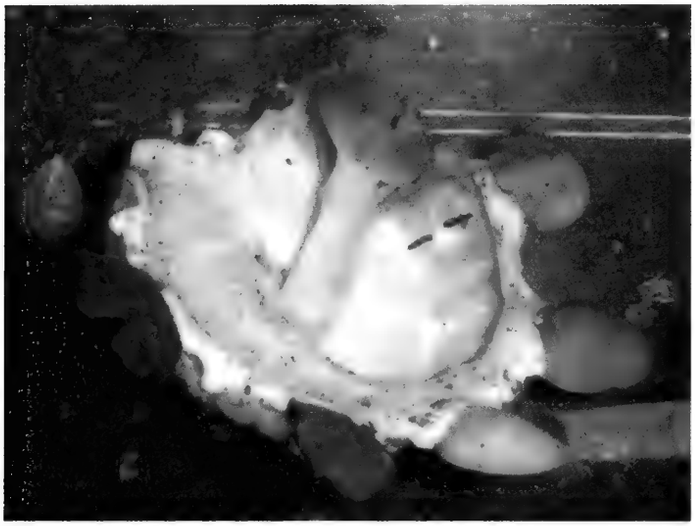
My aquarium on the trawler with a nice catch of shells, including: *Entemnotrochus rumphii*, *Cypraea guttata*, *Cypraea miliaris*, and *Cypraea hungerfordi*.

Taking pictures of living cowries was the one of the highlights of the trip. I was fortunate enough to photograph some uncommon species, many of which had never before been photographed alive. Watching them crawl around the aquariums with their mantles extended was really quite a thrill.

On the 14th day at sea news came that a nearby trawler had netted a live *Cypraea langfordi*. After some radio conversation we arranged a meeting between the two boats. Four hours later that trawler caught up with our boat, but the specimen had already died. Then luck knocked on the door a second time that same day when only a couple of hours later another trawler announced a catch of a *Cypraea langfordi*. Thanks to both captains, I had the shell three hours later and it was still alive. I took many pictures of this shell.

Another interesting encounter was with *Xenophora minuta*. The agility and speed of this mollusk is almost beyond description.

With this photograph I recorded the moment the living *Cypraea langfordi* was transferred between the two trawlers. Luckily the sea was calm enough that the two boats could close to a close enough position for this transfer.



This is the *Xenophora minuta* Qi et Ma, 1986, that was so shy. It has been turned upside down in order to show more of the animal as it extends in order to right itself. Clearly visible is the bright white animal with yellow tentacles. At the base of the tentacles are the eye spots, apparently quite effective. Also visible is the operculum.

A typical mollusk responds in a sluggish manner to almost any stimulus. Most will not retract or pull back in reaction until actually touched. *X. minuta* is completely different. It withdrew into its shell the very moment I lifted my camera. It seemed that even the smallest change in its surroundings could trigger its red alert defense. I avoided creating shadows and kept the light uniform; it still reacted to each small movement. I was determined to get my picture, so I held absolutely still with my camera in position and waited, and waited. When it finally extended from its shell I pressed the camera button. Every two to three minutes I played this cycle of "hide-and-seek" with this small carrier shell and took many pictures.

This was an exciting trip and I was able to collect a great many shells, and this time each has correct and detailed data. The captain and crew were gracious throughout the trip and willingly helped me in my collecting and photographing efforts. That said however, this was no luxury cruise. The days, and many of the nights, were long and exhausting. I gained a great appreciation for this difficult and sometimes dangerous profession. I can also understand why the majority of shells collected in this manner will continue to have generic collection data only.

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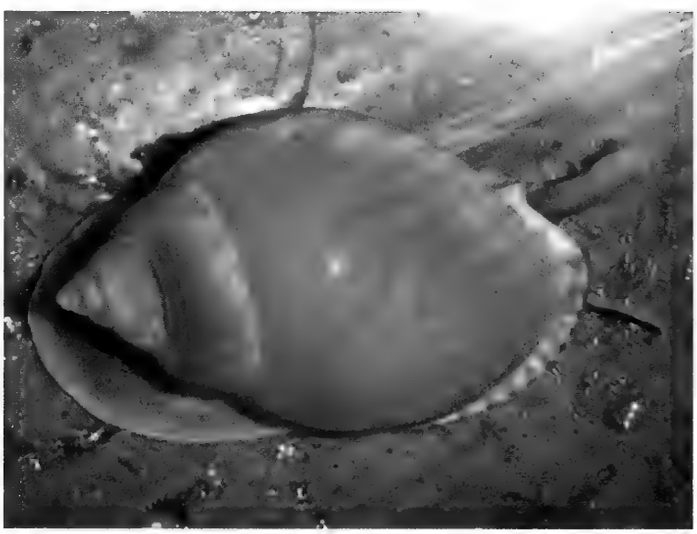
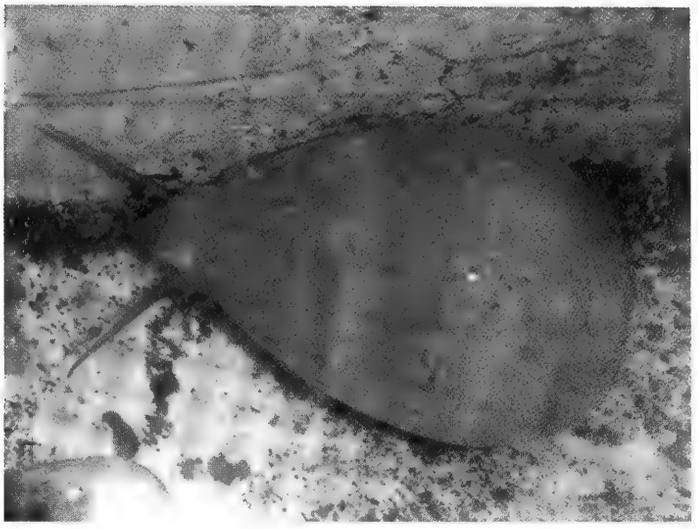
Semicassis bisulcata japonica (Reeve, 1848)

Semicassis inornata (Pilsbry, 1895)



Phalium bulla (Habe, 1961)

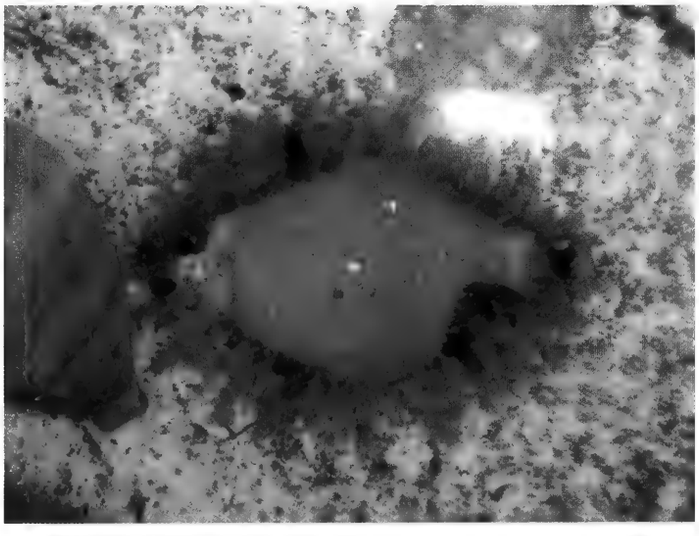
Casmaria ponderosa nippponensis Abbott, 1968 (unusual pattern)



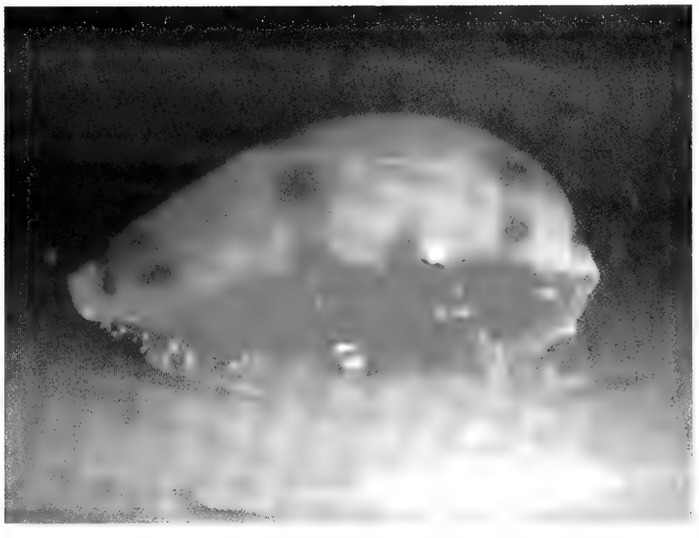
Cypraea hirasei (Roberts, 1913)

Casmaria ponderosa nippponensis Abbott, 1968

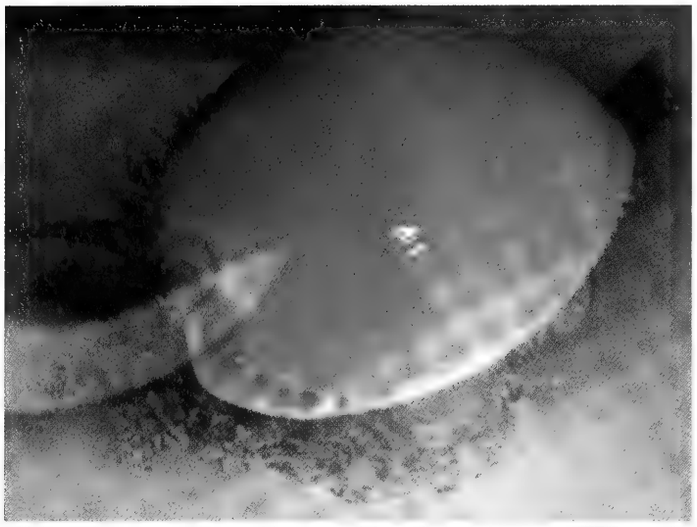
Cypraea hungerfordi (Sowerby, 1888)



Cypraea miliaris miliaris (Gmelin, 1791)

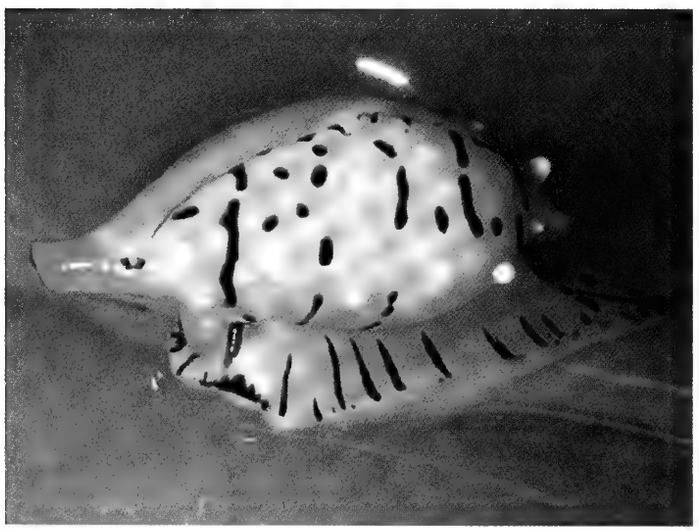


Cypraea musumea (Kuroda & Habe in Habe, 1961)



Cypraea guttata Gmelin, 1791, without the typical white spots.

The second *Cypraea langfordi* (Kurioda, 1938) caught.



The beauty of ovulids is well known to most collectors, but few get to see a living and quite breath-taking ***Xandarovula xanthochila*** (Kuroda, 1828).

This is *Latiaxis mawae* (Griffith & Pidgeon,1834), which has just laid six egg capsules in the 40 minutes after it was placed in the aquarium. I do not believe this activity has been previously documented.

The Shells Collected

A few notes about the list of shells collected during this trip:

Due to space limitations the locality data and depths are not included, but they are recorded for each shell I collected. I recorded the latitude and longitude, as well as the depth, as the shells were collected. Drag net migration was between 5-20 sea miles and depths varied from approximately 100m to 150m.

The water depths I listed refer to the depth where the net was dragged up. In most cases the variation of water depth along net drift limits was within +/-5 meters for each casting.

Aclididae	*Aclis loveniana* Adams, 1861
Acteonidae	*Punctacteon nakayamai* (Habe, 1952)
Architectonicdae	*Architectonica trochlearis* (Hinds, 1844)
	Discotectonica acutissima (Sowerby, 1914)
Arcidae	*Hawaiarca uwaensis* (Yokoyama, 1928)
Buccinidae	*Cantharus* species
	Clivipollia species
	Euthria japonica (Shuto, 1978)
	Hindsia magnifica (Lischke, 1871)
	Hindsia sinensis (Sowerby, 1887)
	Phaenomenella insulapratasensis Okutani & Lan, 1994
	Siphonalia cf. *aspersa* Kuroda & Habe, in Habe, 1961
	Siphonalia cf. *fusoides* (Reeve, 1846)
Bullinidae	*Bullina nobilis* Habe, 1950
	Bullina virgo Habe, 1950
	Eosipho desbruyeresi nipponensis Okutani & Fujiwara, 2000
Calliostomatidae	*Calliostoma consors* (Lischke, 1872)
	Calliostoma haliarchus (Melvill, 1889)
Cancellariidae	*Cancellaria spengleriana* Deshayes, 1830
	Fusiaphera azumai Habe, 1961
	Fusiaphera macrospira (Adams & Reeve, 1850)
	Fusiaphera macrospiratoides Habe, 1961
	Trigonostoma thysthlon (Petit & Harasewych, 1987)
Capulidae	*Turritropis turrita* Habe, 1962
Cardiidae	*Frigidocardium exasperatum* (Sowerby, 1838)

	Glans sagamiensis Kuroda & Habe, 1961
Cardiidae	*Microcardium nomurai* (Kuroda & Habe, 1951)
	Microcardium torresi (Smith, 1885)
Cassidae	*Casmaria ponderosa nipponensis* Abbott, 1968
	Echinophora wyvillei (Watson, 1886)
	Galeodea echinophorella Hirase, 1936
	Phalium bisulcatum japonica (Reeve, 1848)
	Semicassis bulla Kuroda in Habe, 1961
	Semicassis inornata (Pilsbry, 1895)
Cavoliniidae	*Cavolinia tridentata* (Niebuhn, 1775)
Columbellidae	*Metanachis laingensis* Sleurs, 1985
	Mitrella species
Conidae	*Conus australis* Holten, 1802
	Conus ichinoseana (Kuroda, 1956)
	Conus kinoshitai (Kuroda, 1956)
	Conus praecellens Adams, 1854
	Conus teramachii (Kuroda, 1956)
	Conus tribblei Walls, 1977
	Conus wakayamaensis (Kuroda, 1956)
Coralliophilidae	*Babelomurex spinosus* (Hirase, 1908)
	Babelomurex stenospinus (Kuroda, 1961)
	Coralliophila ovoideus Kosuge, 1985
	Latiaxis mawae (Griffith & Pidgeon, 1834)
	Latiaxis pilsbryi Hirase, 1908
	Mipus eugeniae (Bernardi, 1853)
Corbulidae	*Varicorbula yokoyamai* Habe, 1949
Cuspidariidae	*Acreuciroa rostrata* (Thiele & Jackel, 1931)
	Cuspidaria nobilis (Habe, 1961)
Cylichnidae	*Eocylichna musashiensis* Tokunaga, 1906
Cypraeidae	*Cypraea hirasei* (Roberts, 1913)
	Cypraea hungerfordi Sowerby, 1888
	Cypraea joycae Clover, 1969
	Cypraea kuroharai (Kuroda & Habe, 1961)
	Cypraea langfordi (Kuroda, 1938)
	Cypraea musumea Kuroda & Habe, 1961
	Cypraea guttata Gmelin, 1791
	Cypraea miliaris Gmelin, 1791
	Cypraea hirasei (Roberts, 1913
Dentaliidae	*Antalis tibanum* (Nomura, 1940)
	Compressidentalium hungerfordi (Pilsbry & Sharp, 1897)
	Dentalium vernedei (Sowerby, 1860)
Epitoniidae	*Amaea iwaotakii* Azuma, 1961
	Amaea secunda Kuroda & Ito, 1961
	Amaea thielei (de Boury, 1902)
	Epitonium dubium (Sowerby, 1844)
	Epitonium fucatum (Pease, 1861)
	Epitonium imperiale (Sowerby, 1844)
	Epitonium minor Grabau & King, 1928
	Epitonium okezoko (Habe, 1961)
	Epitonium sakuraii (Habe, 1961)
	Epitonium setonaikaiense (Masahito & Habe, 1975)
	Epitonium syoichiroi Masahito & Habe, 1976
Eulimidae	*Eulima unilineata* Adams & Reeve, 1850
	Niso yokoyamai Kuroda & Habe, 1950
Fasciolariidae	*Fusinus* cf. *longicaudus* (Lamarck, 1816)
	Fusinus forceps (Perry, 1811)
	Simplicifusus hyphalus (M. Smith, 1940)
Ficidae	*Ficus variegata* Röding, 1798
Glossidae	*Meiocardia tetragona* (A. Adams & Reeve, 1850)
Glycymeridae	*Glycymeris gigantea* (Reeve, 1843)
Harpidae	*Morum cancellatum* Sowerby, 1889
Janthinidae	*Janthina prolongata* Blainville, 1823
Limidae	*Lima* species
Melongenidae	*Hemifusus tuba* (Gmelin, 1791)
Mitridae	*Cancilla isabella* (Swainson, 1831)
Muricidae	*Boreotrophon gorgon* (Dall, 1913)
	Chicomurex superbus (Sowerby, 1889)
	Chicoreus cnissodus (Ethyme, 1889)
	Haustellum cf. *rectirostris* (Sowerby, 1841)
	Haustellum gallinago (Sowerby, 1903)
	Lataxiena fimbriata (Hinds, 1844)
	Pteropurpura plorator (Adams & Reeve, 1849)
	Pteropurpura vespertilio (Kira, 1959)
Muricidae	*Rapana rapiformis* (Born, 1778)
Nassariidae	*Niotha* cf. *variegata* (Adams, 1852)
	Zeuxis castus (Gould, 1850)
	Zeuxis hirasei Kuroda & Habe, 1952
	Zeuxis tateyamensis (Kuroda in Fujita, 1929)
Naticidae	*Natica vitellus* Linnaeus, 1758
	Polinices cf. *albumen* (Linnaeus, 1758)
Olividae	*Ancilla rubiginosa* Swainson, 1832
	Oliva species
Ovulidae	*Margovula pyriformis* (Sowerby, 1828)
	Phenacovolva dancei Cate, 1973
	Primovula cf. *galearis* Cate, 1973
	Primovula tigris Yamamoto, 1971
	Prionovolva brevis (Sowerby, 1828)
	Prionovolva choshiensis (Cate, 1973)
	Volva volva (Linnaeus, 1758)
	Xandarovula xanthochila (Kuroda, 1928)
Pectinidae	*Chlamys* species
Personidae	*Distorsio reticularis* (Linnaeus, 1758)
Pholadidae	*Zirfaea* species
Pinnidae	*Atrina kinoshitai* Habe, 1953
Pleurotomariidae	*Entemnotrochus rumphii* (Schepman, 1879)
	Pleurotomaria salmiana Rolle, 1899
Plicatulidae	*Plicatula muricata* Sowerby, 1873
Potamididae	*Cerithidea rhizophorarum* Adams, 1855
Ranellidae	*Biplex perca* Perry, 1811
	Charonia sauliae (Reeve, 1844)
	Cymatium cf. *tenuiliratum* (Lischke, 1873)
	Cymatium parthenopeum (Salis, 1793)
	Gyrineum pulchrum (Gray, 1836)
Ringiculidae	*Ringicula doliaris* Gould, 1860
Strombidae	*Tibia powisi* (Petit, 1842)
Terebridae	*Triplostephanus pretiosa* (Reeve, 1842)
Tonnidae	*Eudolium pyriforme* (Sowerby, 1914)
	Tonna lischkeana (Küster, 1857)
	Tonna luteostoma Küster, 1858
	Tonna olearium (Linnaeus, 1758)
Triviidae	*Trivirostra oryza* (Lamarck, 1810)
Trochidae	*Calthalotia strigata* (Adams, 1853)
Turbinidae	*Bolma millegranosa* (Kuroda & Habe, 1958)
	Guildfordia yoka Jousseaume, 1888
Turridae	*Clavus* cf. *enna* (Dall, 1918)
	Clavus subobliquata (Smith, 1879)
	Cochlespira pulchella (Schepman, 1913)
	Comitas kamakurana (Pilsbry, 1875)
	Cytharopsis cancellata A. Adams, 1865
	Daphella pulviscula Chino, 2006
	Gemmula kieneri (Doumet, 1840)
	Horaiclavus madurensis (Schepman, 1913)
	Inquisitor elachystoma (Martens, 1901)
	Inquisitor flavidula (Lamarck, 1822)
	Nihonia mirabilis (Sowerby, 1914)
	Ptychobela nudivaricosa (Reeve, 1843)
	Spergo yoshidae (Kuroda & Habe, 1961)
	Thatcheriasyrinx orientis (Hervier, 1896)
	Turridae species
	Turris annulata Reeve, 1843
Veneridae	*Callanaitis hiraseana* Kuroda, 1930
	Pitar species
Vermetidae	*Vermetus* species a
	Vermetus species b
Verticordiidae	*Verticordia deshayesiana* (Fischer, 1862)
Volutidae	*Fulgoraria hamillei* (Crosse, 1869)
	Melo melo (Lightfoot, 1786)
Xenophoridae	*Xenophora minuta* Qi et Ma, 1986

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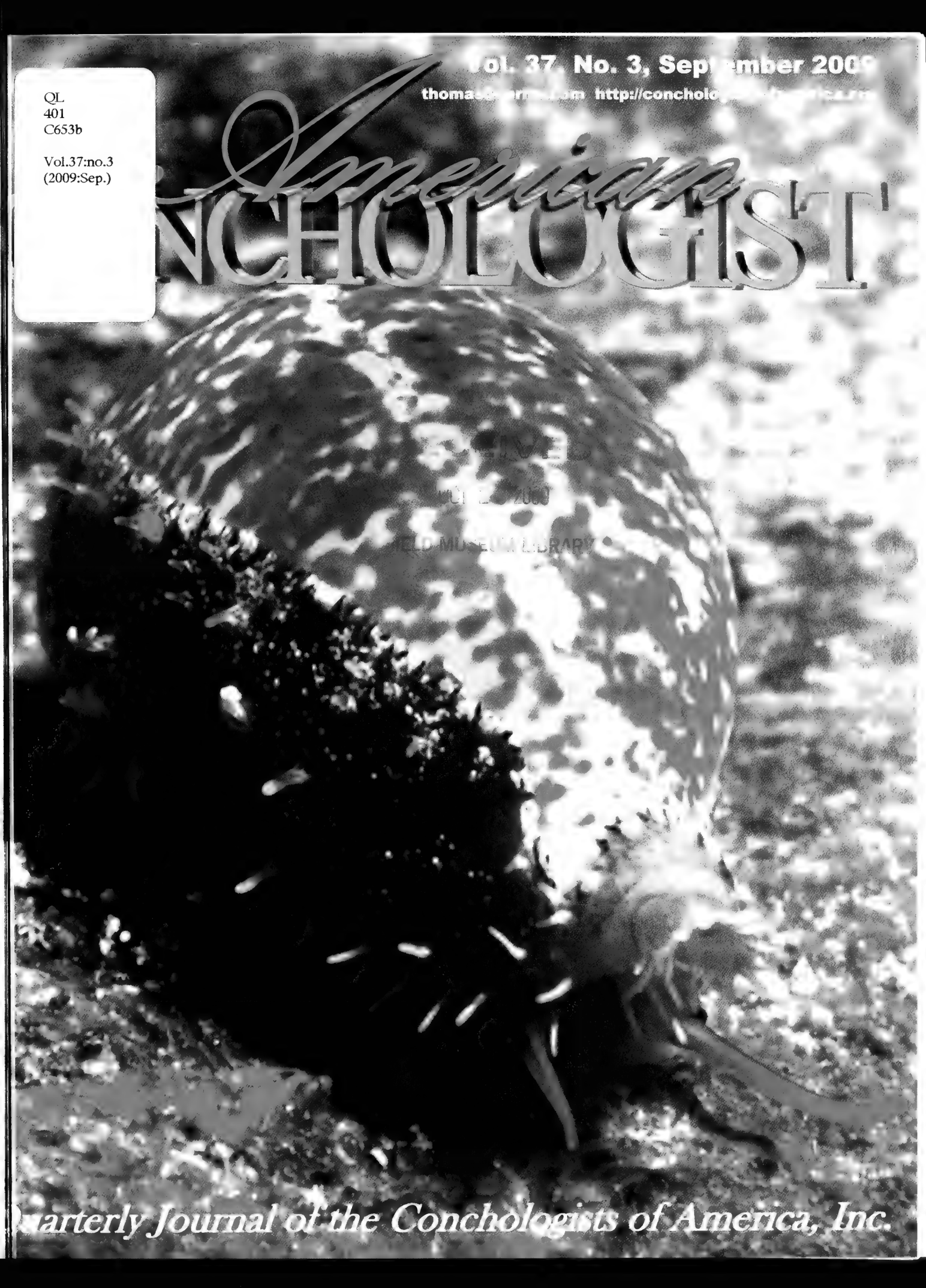

Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS OF AMERICA, INC.

Volume 37, No. 3 September 2009

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

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IN THIS ISSUE

Front cover: *Cypraea dayritiana* Cate, 1963, 18mm, photographed *in situ* by Charles Rawlings during a shallow water night dive, northern Palawan, Philippines. These may be the first photographs of the living animal. See the story on page 28.

Back Cover: *Spondylus pikeringae* Lamprell, 1998, 47mm, photographed by Moti Kovalis during a night dive in the Gulf of Aqaba, Red Sea. The Gulf of Aqaba is situated on the east side of the Sinai Peninsula, in the northern portion of the Red Sea. Moti's adventure diving in this unique habitat will be told in the next issue.

Editor's Comments:

First a word about including four book reviews in a single issue. It is a lot, admittedly, but all four are books that deserve a place in a shell collector's bookcase and I wanted to make sure our readers had an opportunity to find out something about these books. All of the reviewed books are reasonably priced: from $10 for Peter Dance's gem, "Seashells on my Mind," to $25 for James Ristine's excursion through the worlds of "Clams, Oysters, and Scallops," to $40 for the greatly anticipated and welcomed coverage by Harry Lee of "Marine Shells of Northeast Florida," to $120 for the much needed identification guide by Alain Robin, "Encyclopedia of Marine Gastropods." Even after including four books for review, others, equally deserving, had to be left out until the next issue. Richard Petit just completed an intriguing volume on the Sowerby's (a companion piece to his work on Reeve (see issue 36, no. 1, March 2008). His unbelievably well researched and thorough work will be reviewed in the next issue. Similarly, the conchological world has seen the publication of two of an anticipated three volumes by G.T. Poppe on "Philippine Marine Mollusks." Like Robin's "Encyclopedia," this is a much needed and welcomed update. There are also new family-specific books that need reviewing (Terebridae and Ovulidae come to mind, not to mention the many Conchological Iconographies), but these have yet to meet my personal funding level (i.e., I can't afford them just yet). The last few years have seen a wealth of shell books, considerably out-matched by the number of newly described species.

According to the International Institute for Species Exploration, Arizona State University, and the Wildlife Conservation Society's *2009 State of Observed Species*, 967 new mollusks were named in 2007 (the last year for which they had firm figures). If each year sees a similar number of newly named species, new and up-dated publications will be a must. To put that number into perspective, the newly named mollusks accounted for only 5% of the total of newly named plants and animals (not including fungi) for 2007. Crustaceans accounted for 5% (840), Arachnids for 6% (1,194), other animals (birds, reptiles, mammals, etc.) for 16% (2,830), flowering plants for 11% (2,052), and the lion's share of new species, 51% (9,411) belonged to insects. In other words, there were ten insects named for each mollusk. To put this further into perspective, in 1981, Abbott and Dance in the "Compendium of Seashells," put the number of *known* Mollusca at 30,000. Various authors have estimated the total number for this phylum at anywhere from 50,000 to 100,000, or even higher (although the lower figure seems to be winning out). On the other hand, the Phylum Arthropoda has over 1,000,000 named species. Beetles (Coleoptera) alone account for over 360,000 *named* species, with butterflies and moths (Lepidoptera) coming in a distant second with 170,000. This would seem to indicate that our taxonomic problems in the molluscan world should pale to those encountered by entomologists. All of which brings me to the two cowrie articles in this issue. One author uses *Cypraea* as a genus for all cowries, the other uses the more recently accepted genera such as *Notocypraea*. Please read the articles for what they present and try not to judge on the correctness of the taxonomy (the jury is still out for many folks). At the same time, be thankful you do not collect beetles!

Tom Eichhorst

Notocypraea: Shell collecting and Science

By Don Cram

Research on a family or genus that is popular with collectors like the southern Australian genus *Notocypraea* can have its drawbacks. In such situations, decisions based on scientific reasoning can conflict with those of collectors and shell dealers. This is the problem that confronted R.J. Griffiths when he produced his seminal review of the *Notocypraea* in 1962, where he used animal and radular characteristics for the first time to assist with species determination. In this review he clearly identified three species that could be positively identified by differing radular characteristics: *N. angustata*, *N. piperita* and *N. comptonii*. He described and illustrated another seven that he accepted as valid species, plus another three that he listed as species Z, Y, and W. In closing he stated that, "It only remains to emphasize this paper is no more than a preliminary review of an extremely complex group. This further research will only be possible if every collector adopts a new point of view. He will have to realize that information on the animal – its habitat, appearance, structure, radula, behavior, and method of breeding – is even more important than the collection of the shell. Until further knowledge of the animal is gained, little progress is likely."

In 1973 I published a small article in *Australian Shell News* where I repeated some of the studies of Griffiths and found them to be correct, republishing four of his radular drawings. Many people did not take this article seriously; none, I may say, had done any study to disprove my work or that of Griffiths. In an article in *W.A. Shell Collector* in August 1974, Paul Trenberth, a well known South Australian collector, wrote: "Since the study of the radula has proved that no real correlation between the species exists and the fact that color markings vary so much that they are no criterion at all, careful study of the shell aperture and teeth, is the only method by which classification can be attempted." Burgess in both his cowry books quoted unpublished studies disputing the findings of Griffiths.

Subsequent to my two articles in *American Conchologist* (March 2006 & June 2007), Dr Lorenz posted a "Preliminary revision of the living *Notocypraea*" on the Internet, where he stated that no studies had been done on the variation of the radula, that I had not illustrated a *N. comptonii* radula and he had to consult the *Atlas of Cowrie Radulae* of Bradner and Kay for an illustration, and that I misidentified the small nondescript shell from Port MacDonnell I called species X in the 2007 article and it was in his opinion, *N. comptonii casta.*

N. comptonii casta Schilder & Summers 1963 was described as a new species from Port MacDonnell in *The Cowry*, a magazine edited by R.J. Griffiths. In an article following the description Griffiths did not agree that it was a valid species, stating it to be only an albino form of *N. comptonii*, that there were intergrades between it and the typical *N. comptonii*, that it was commonly found in sympatry with *N. comptonii* at Port MacDonnell, and that he could find no radular difference between the two forms. The live specimen illustrated on page 10, fig. 1 of the 2006 article is C.16 in my collection, a pure white specimen of *N. casta* from the type locality. The radula of this specimen is illustrated here as Fig. 1. I have 10 others identical to this with

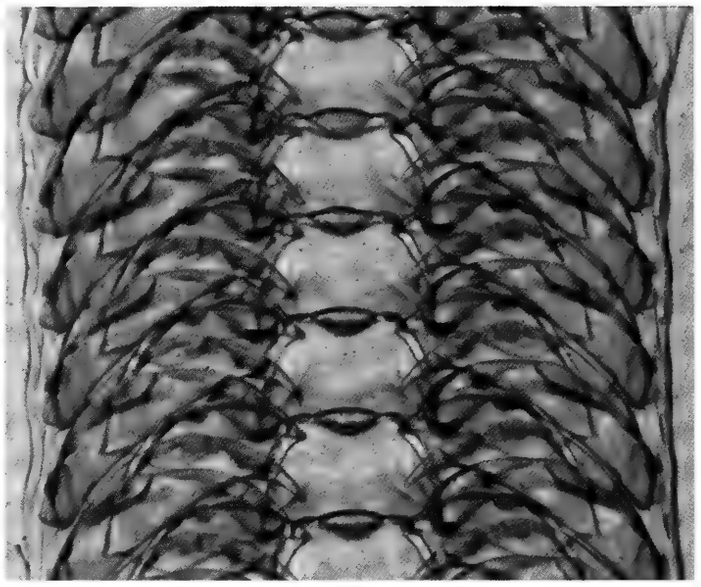
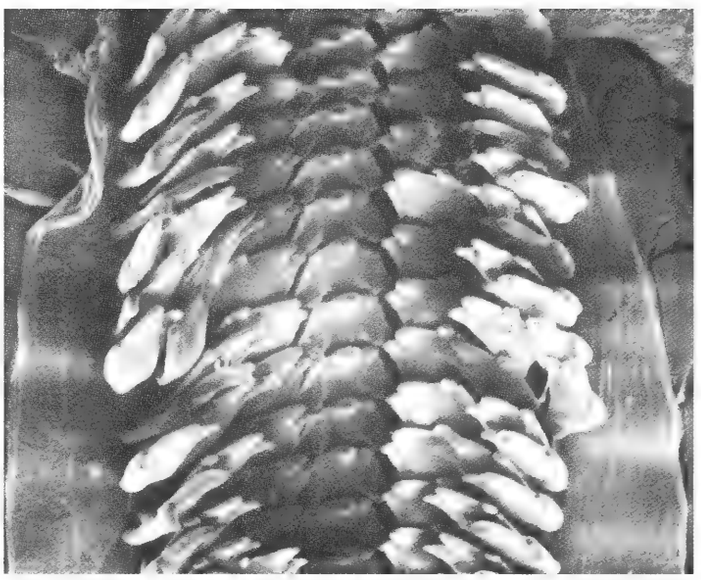


Fig. 1 (above) The radula of *Notocypraea casta* (C.16) from Port MacDonnell, South Australia. The living animal was shown in the March 2006 COA article on page 10, Fig. 1, labeled as a pale form of *N. comptonii*.

Fig. 2 (below) An SEM image of the radula of *Notocypraea casta* (F. 109338) from Port MacDonnell, South Australia.



radular mounts and a similar specimen I donated to Museum Victoria (Reg. No F.109338), accompanied by a SEM radular image of this specimen (Fig. 2) and of specimens of *N. angustata*, *N. piperita*, and *N. declivis*, done by Dr Brian Smith in 1976. The *N. comptonii* radula is clearly described and illustrated on page 9 of the 2006 COA article and is an average representative of over 60 matched to the shell in my collection from over a wide area of their distribution.

The Port MacDonnell *Notocypraea* specimens have been a problem for collectors for many years as they are extremely variable. They have been a source of much exchange material, sometimes with names that are not in any way related to original descriptions and type specimens. I first collected there in early 1970 when I became interested in the animal and radulae of this very interesting genus. Since then I have retained a large selection of these shells matched with their radulae. Regardless of their shell, some typical and some very atypical, they are quite easy to sort out using animal and radular characteristics. A number of specimens brought to me by divers recently have reaffirmed the viability of this method to both myself and to others who have examined this material. There are three species that are common to that area, (*N. angustata*, *N. comptonii*, and *N. declivis*). Specimens of *N. angustata* and *N. comptonii* are much lighter in color than those found both east and west of this locality, but *N. comptonii* is extremely variable, sometimes having spots or odd patterns, and ranging to pure white with intergrades. Specimens of *N. declivis* range from heavily spotted to creamy white and unspotted with intergrades. A fourth, not so common, is the yet to be determined species X.

In the 2007 COA article I provisionally grouped the Port MacDonnell species X specimens with the many deep water Bass Strait and Tasmanian forms that have radular characteristics similar to the holotype of *N. emblema* Iredale, 1931, but do not fall into the parameters of the five generally recognized species as *Notocypraea* sp. X cf. *emblema*. Several more specimens have come to hand that can be added to this complex and some additional information that is discussed here.

I recently had access to live-taken specimens of the unidentified species X collected by divers at Port MacDonnell, including images of the live animal crawling. The specimens were preserved in 70% ethanol when collected, the radula extracted, and pieces of foot and mantle tissue matched and preserved in 96% ethanol for future molecular analysis. The main body of the animal is fawn to light gray, the tentacles are an orange to apricot, and the siphon is white. A specimen, C.120 in my collection (radula illustrated in the 2007 COA article), photographed in 1989, shows the mantle when fully extended to be dark gray and mottled (Fig. 3). Specimen SW.229 shows the mantle is fully retracted as well as the gray foot, orange tentacles, and white siphon (Fig. 4). This is clearly different from *N. casta*, which has an animal identical to *N. comptonii* (orange body tentacles and siphon) as clearly described in the 2006 article, reproduced here as Fig. 5. In the 2007 article I presented a table comparing different *Notocypraea*, including data for 11 specimens of the Port MacDonnell species X and noting the wide variation of radular size, sometimes extreme, of the Port MacDonnell species X, even when the shells are similar in size and comparable morphologically. One example was specimen C.34. The shell and radula of this specimen were both illustrated in the 2007 article. The shell is 20.2mm long and its radula is quite large when compared to specimen C.140 (21.1mm long) with a considerably smaller radula (see table below).

This variation has puzzled me for many years. Much cleaner removal of the animal from these recently collected specimens has confirmed what I have long suspected. The radula of a female specimen is significantly larger overall than that of the male. The central tooth of the female is considerably larger and

Fig. 3 (above) The dark mantle covers the shell of species X (C.120) from Port MacDonnell, showing the orange tentacles, white siphon, and gray body.
Fig. 4 (below) The light-colored shell of species X (SW. 229) collected by Simon Wilson from Port MacDonnell, showing the same siphon, tentacle, and body color as the white morph.

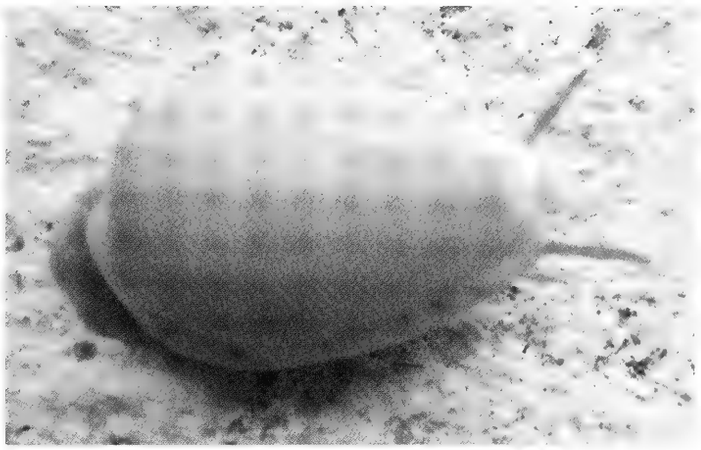


Fig. 5 (below) This is the image of a living *N. comptoni* shown in the 2006 COA article, (page 10, Fig. 1). Note the orange mantle, siphon, and tentacles. With the similarity of shell characteristics between this species and species X, the radula and soft-body parts become important differentiators.

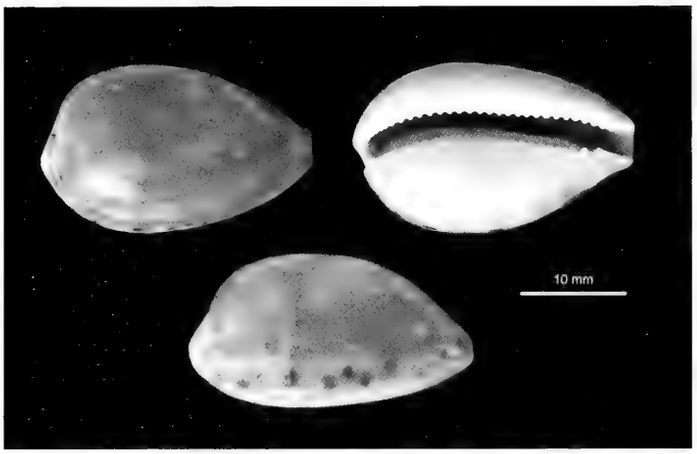


Fig. 6 (above) This is a specimen of species X (SW. 121) collected by Simon Wilson in Simpson's Bay, Bruny Island, Tasmania. The shell is different from the Port MacDonnell specimens, but the radula and soft-body characteristics are similar.

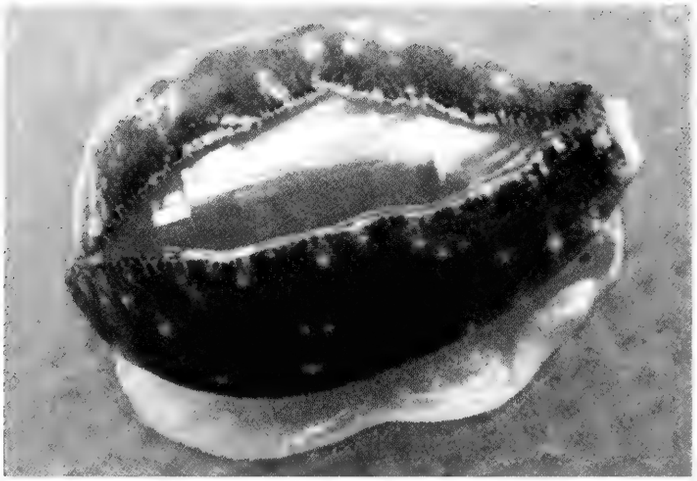
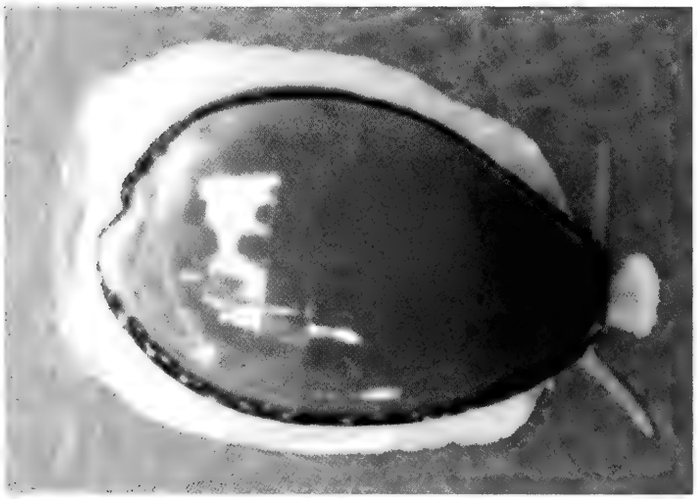


Fig. 7 (above) This is the same shell (species x, SW. 121) from Simpson's Bay, collected and photographed by Simon Wilson. Here the animal has its mantle almost fully extended.
Fig. 8 (below) The animal has retracted its mantle (still partially evident along the periphery of the shell) and extended its siphon and tentacles.



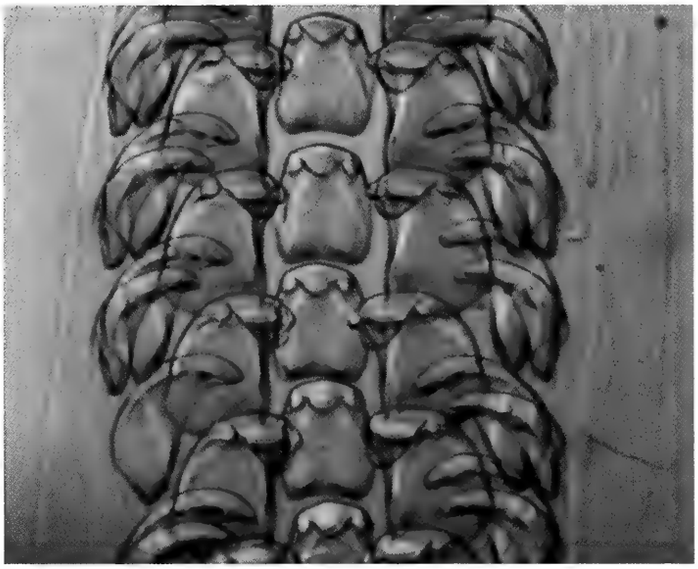


Fig. 9 A radula mount of the Simpson's Bay specimen of species X (SW. 121) showing characteristics typical of the specimens of species X from Port MacDonnell.

more dome shaped, whereas the male central tooth is smaller and more squared (closely resembling *N. piperita*), but sometimes slightly elongated, with centrally placed basal denticles as in the female. Sexual dimorphism of the radulae is known from one species of the small archaeogastropod *Tricolia variabilis*; in this case the female has more lateral and marginal teeth than the male, a feature that does not occur in any other species of the genus (Robertson 1985). Although the radular size of all other species of *Notocypraea* varies slightly according to the size of the shell, the male shell is usually slightly smaller than the female and the larger radular of the female seems to be species specific to this yet to be determined species X.

I have in my collection two *Notocypraea* specimens (23.7 and 27.1mm long), with their radulae mounted that were dredged in Simpsons Bay, D´Entrecasteaux Channel, Bruny Island, Tasmania in 1984. One of these is shown as Fig. 6 (photographed by Simon Wilson). The shells have a fawn brown dorsum with a few darker brown spots or blotches on the columellar side and 2-4 spots on the dorsum, with 7-10 smaller brown spots along the labial margin. There are no dorsal bands and the base is creamy white. They have a similar radular form, although different from the Port MacDonnell species X, the holotype of *N. emblema*, and specimens mentioned or described in the 2007 COA article as *Notocypraea* cf. *emblema*. These have been very puzzling as the morphological characteristics of the shells are quite different from any of the other forms that fall into this category that have been examined or discussed. A recent diving trip to that area by Simon Wilson yielded two specimens almost identical to mine with images of the live animal, including features similar to those just described for the recently collected species X from Port MacDonnell (fawn animal, white siphon, and darker blotchy gray mantle) (Figs. 7-8). A radula (Fig. 9) recovered from one of these specimens is the typical species X form. Foot and mantle tissue has been saved for future examination.

Some loose radular teeth were recovered from dried up animal residue from one of two similar specimens from 140 fathoms off Lakes Entrance from the collection of Coralie Griffiths (shell

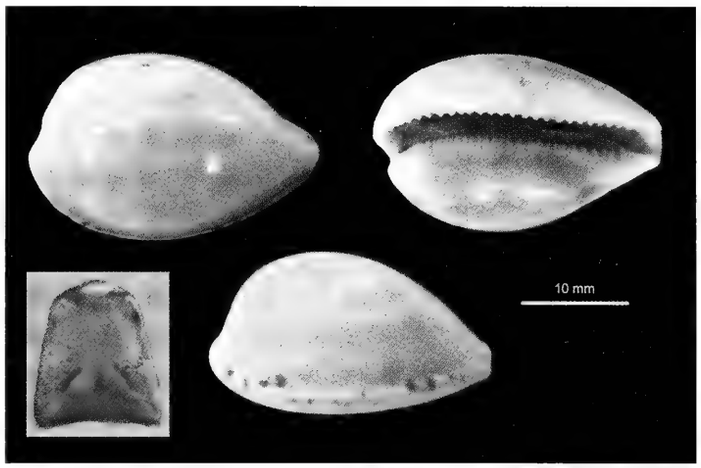


Fig. 10 (above) *N. emblema* (female) dredged at 140 fathoms, Lake Entrance, Victoria (about 320km east of Melbourne), from the collection of Coralie Griffiths. The central radular tooth was recovered from portions of dried soft tissue and shows that many similar specimens taken by trawlers from that area and sold to collectors as *N. angustata* were in fact closely related to the type of *N. emblema* and to the specimens dredged off Gabo Island by Neil Buckland.

Fig. 11 A shell (Reg. No. E 261010) loaned to me by the Tasmanian museum. It was dredged off the southern tip of Tasmania from 200 meters by a Commonwealth Scientific Industrial Research Organization (CSIRO) vessel and is the most southerly of any *Notocypraea* I have seen. Although dredged alive, I could not find a radula but I did save the soft tissue. It is very similar to Coralie Griffith's specimen (Fig. 9) from Lakes Entrance.

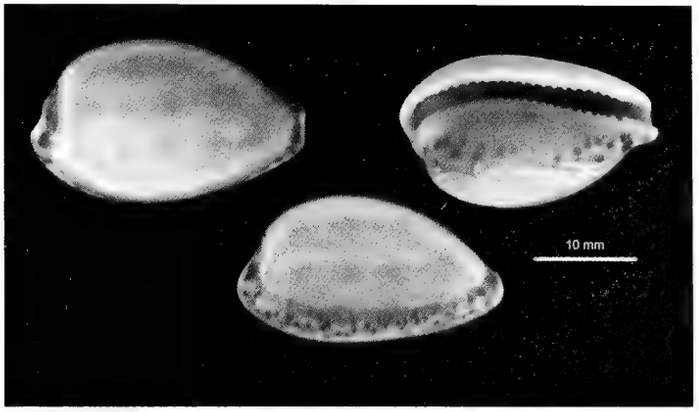
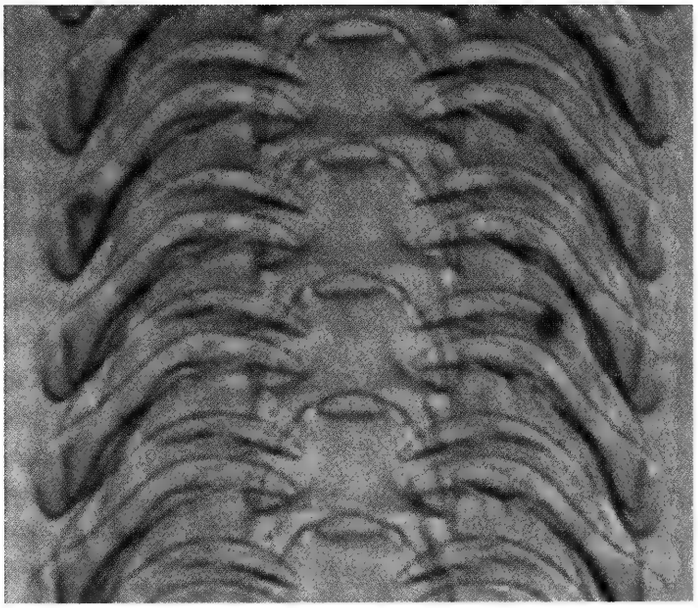


Fig. 12 (above) A lightweight deepwater specimen of *N. angustata* (Reg. No. F-120592, Museum Victoria) collected with specimens of *N.* species X (Reg. No. F113604, featured in the 2007 COA article) from the Bass Strait Cable between King and Flinders Islands in 1910. The shell of this specimen is similar to the type of *N. molleri*, which also has this spotting around the spire.

Fig. 13 (below) The radula from the Bass Strait specimen of *N. angustata*.



and central tooth illustrated, Fig. 10). A specimen dredged from 200 meters off the southern tip of Tasmania by a government research vessel was loaned to me to extract the radula. Unfortunately the buccal bulb was missing, possibly nipped off during the dredging process, hence no radula, but mantle and foot tissue have been retained (shell illustrated, Fig. 11). Prior to his review, R.J. Griffiths examined and mounted several radulae of deep-water specimens dredged by Neil Buckland off Gabo Island, in Bass Strait. Four of these radulae are in the WAM, as is one shell matched to a radular slide (illustrated in the 2007 COA article, Reg. No F.20865 from Museum Victoria collection). Having examined all these radulae I believe (Cram 2007) they are conspecific with *N. emblema* although they are all labeled *N. molleri* by Griffiths. Two of these shells are available for examination (F. 20865 has a ribbed or denticulate columellar canal while F. 27039 (now F. 162755) lacks such ribs. Tissue has also been preserved from specimens obtained when lifting the Bass Strait Cable between King and Flinders Islands (shell and radula illustrated in the 2007 COA article). There are two other specimens in Museum Victoria collections with radular mounts, one described by Griffiths as species Y and another dredged off Stanley, N/W Tasmania. I have examined both and believe they are part of this sp. X complex.

In his preliminary revision Lorenz accepted *N. subcarnea* as a valid species and listed *N. albata*, *N. emblema* and *N. molleri* as synonyms, using a ribbed posterior canal on the columellar side and a straight or curved terminal ridge as diagnostic criteria.

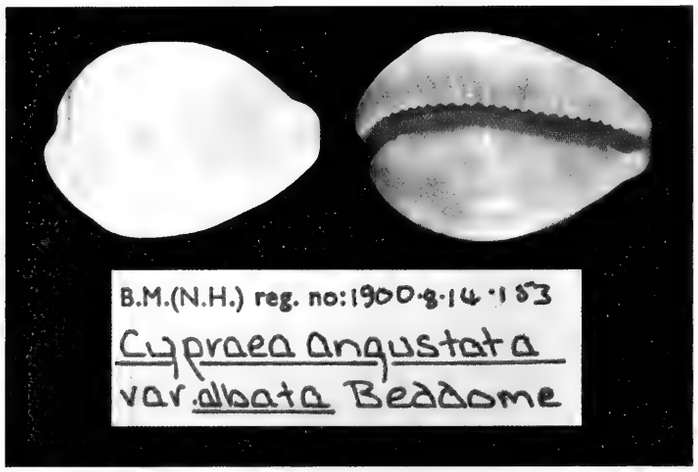


Fig. 14 (above) The holotype of *N. albata* (type locality is Tasmania) at the British Museum. Photograph taken for me in 1976 by the late Dr. Brian Smith. The specimen has since been lost, so this image assumes some importance for identification.

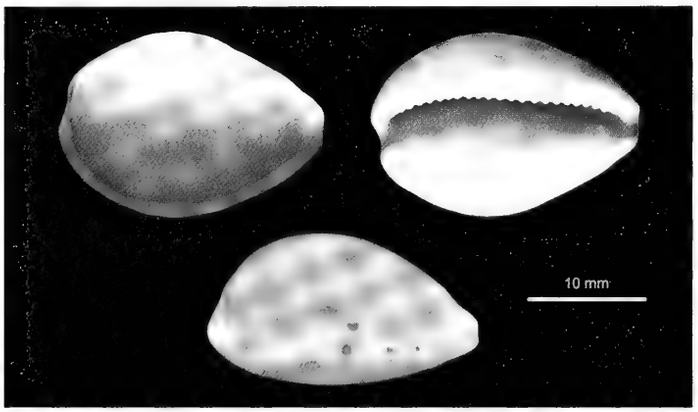


Fig. 15 (above) The holotype of *N. subcarnea* (type locality Derwent River Tasmania, (B.M.N.H.) Reg. No. 19000 ·11·14·.26). Photograph courtesy of the British Musem.

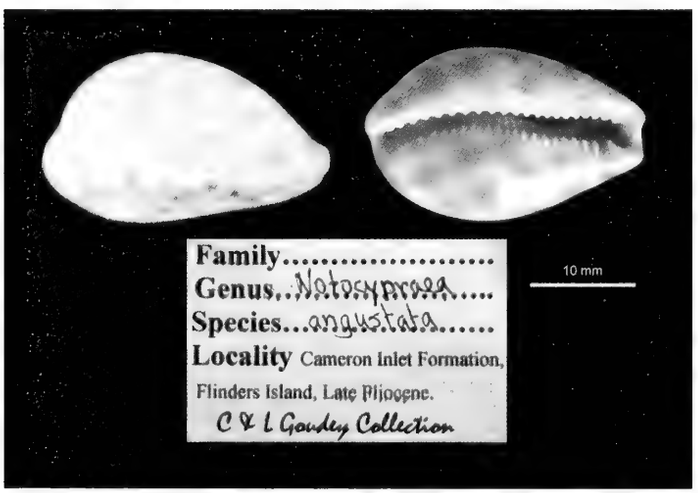


Fig. 16 (above) A fossil *N. angustata* (late Pliocene) from Cameron Inlet Formation, Flinders Island, Bass Strait (Chris Goudey collection) that matches almost exactly in size, tooth structure and count, spotting, and weight, my species X specimen C.34 from Port MacDonnell.

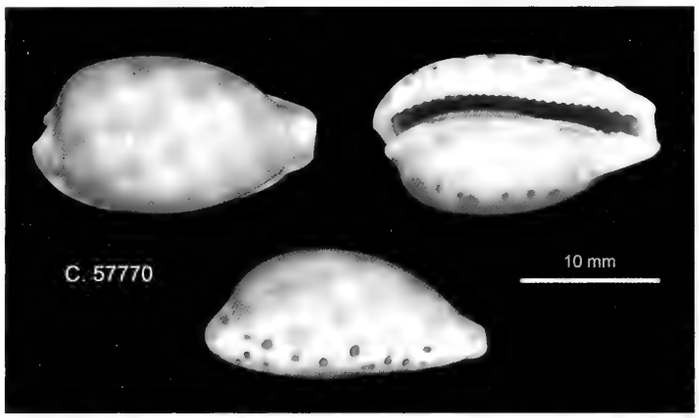


Fig. 17 The holotype of *N. dissecta* (Iredale, 1931) (C. 57770) from the type locality dredged by Neil Buckland from the Western Australian Museum (WAM).

Although these features are evident in some Bass Strait specimens that fall into this category, this is not a consistent trait. I have recently examined the holotypes on loan to Museum Victoria of *N. subcarnea*, *N. emblema* and *N. molleri*. All lack the ribbed posterior canal. The terminal ridge is straight on *N. emblema*, but slightly curved on *N. subcarnea* and *N. molleri*. Many deepwater specimens of *Notocypraea* are very lightweight and although fully adult are probably not fully mature. I suspect this may be because the shell has not thickened enough to mask juvenile features, but it should not be dismissed as a first step in the identification process. Although there is no radula with the holotype of *N. molleri*, I believe it is a deepwater form of *N. angustata* because of its spotting, which extends around the spire. A lightweight deepwater specimen of *N. angustata* obtained while lifting the Bass Strait Cable between King and Flinders Islands in 1910, Reg. No. F. 120592 Museum Victoria, identified by the radula, is illustrated here (Fig. 12-13) and seems close to the type of *N. molleri*, which also has this spotting around the spire. The holotype of *N. albata* (Beddome, 1898), B.M.(N.H) reg: 1900.8.14.1.53, a pure white heavily calloused shell (Fig. 14), which I examined and photographed in the British Museum in 1980, is also illustrated here, but recently enquiries to that institution have been unsuccessful and it appears that the specimen has been lost.

The holotype (Fig. 15) of *N. subcarnea* (Beddome, 1896) (B.M.(N.H.) reg.no; 19000 ·11·14·.26), type locality Derwent River area, Tasmania, is heavily calloused on both sides with a fawn to flesh colored dorsum and is quite different from any of the many deepwater Bass Strait and eastern Australian deepwater shells I have been able to study. As no radular and molecular studies have been done on specimens that match the holotype of *N. subcarnea* and compared with all the highly variable material that cannot be identified as one of the four known species that inhabit the area, simply grouping them under this the oldest name is premature and simplistic. Morphological characteristics of the shells of many, to date, unidentified Bass Strait forms vary so widely that they are of limited use. The waters of Bass Strait cover a vast area and when sea levels fell about 10,000 years ago, it created a land bridge between the mainland and Tasmania. Re-habitation of this area when sea levels rose may have been a factor in this present day diversity. A perfectly preserved late Pliocene specimen (Fig. 16) in the collection of Chris Goudey from Cameron Inlet Formation,

Flinders Island, Bass Strait, recently loaned to me, matches almost exactly in size, tooth structure and count, spotting, and weight, my species X specimen C.34 from Port MacDonnell. There is now growing evidence that all of these Bass Strait and Tasmanian deep water specimens that have a similar radular form that may also be sexually dimorphic, (like the Port MacDonnell sp. X radulae), but with shells that vary so much morphologically that they are impossible to link to each other. They may be geographical morphs of one species (multiple similar specimens collected at the same locality suggest this) or there may be more than one species. It only remains now to pursue by scientific methods these puzzling specimens that are not part of the main well-documented group on *Notocypraea* so the correct name or names can be applied. With this research presented here I hope some progress has been made.

The radula of the holotype of *N. dissecta* (AM C. 57771) mounted by Griffiths in 1959 and the holotype (Fig. 17) from the Australian Museum (AM) and two radular mounts and a shell from the type locality dredged by Neil Buckland from the Western Australian Museum (WAM), also mounted and identified by Griffiths have been examined. I first saw the holotype and radula of *N. dissecta* in 1976 and not until Lorenz posted an image of the holotype of *N. hartsmithi* on the Internet did I realize (Cram 2005) that this shell was conspecific with *N. dissecta.* The radula is similar to *N. piperita* but variable in size and the three shells I have seen from the type locality vary considerably. Both the holotype and the WAM shell lack the extended fossula, considered a specific character, but another specimen illustrated in the 2006 article has this feature and is similar to the holotype of *N. hartsmithi.* Griffiths examined at least eight specimens and a table in his review shows an average increase in fossular extension. Although Lorenz accepts it as a valid species, until more specimens are found from the type locality and further molecular analysis done, it should remain as is generally accepted, a form of *N. piperita.*

A live taken specimen of *N. piperita wilkinsi* recently collected intertidally at Bear Gully near Cape Liptrap by Simon Wilson is illustrated here (Fig. 18, compared with *N. comptoni*), as is its radula (Fig. 19). The shell, radula, and animal of this specimen, which is similar to my specimen collected close to the type locality, is of the *N. piperita* form (Fig. 20) and its relation to this species has been clearly explained (Cram 2006). I note Lorenz continues to list it as a form of *N. comptonii.*

During the preparation of his review Griffiths made many radular mounts, all unstained in Euparal, and some of these are extant in Australian museums. I have recently had access to 15 of these, including three holotypes (*N. emblema*, *N. wilkinsi*, and *N. dissecta*), one from the type series (*N. euclia*), two radular mounts, one shell of *N. dissecta* from the type locality, and five Griffiths specimens labeled as *N. molleri* from deep water off Gabo Island, plus several other easily determined mounts. Using a digital camera and either my microscope or the BH 2 Olympus at Museum Victoria, I can now quickly produce an image of these or of any of the approximately 200 *Notocypraea* mounts I have in my collection.

During the course of this study it has been proven that the five generally accepted valid species of *Notocypraea*, *N. angustata*, *N. piperita*, *N. comptonii*, *N. declivis*, and *N. pulicaria* can be easily determined by using a combination of shell, animal, and radular characteristics, regardless of whether individual shell patterns or forms are typical or atypical, or whether they occur intertidally or

Fig. 18 (above) Two living specimens of *Notocypraea*, *N. comptoni* on the left and *N. piperata wilkinsi* Griffiths, 1959 on the right. Note the different colors of the tentacles and siphons.

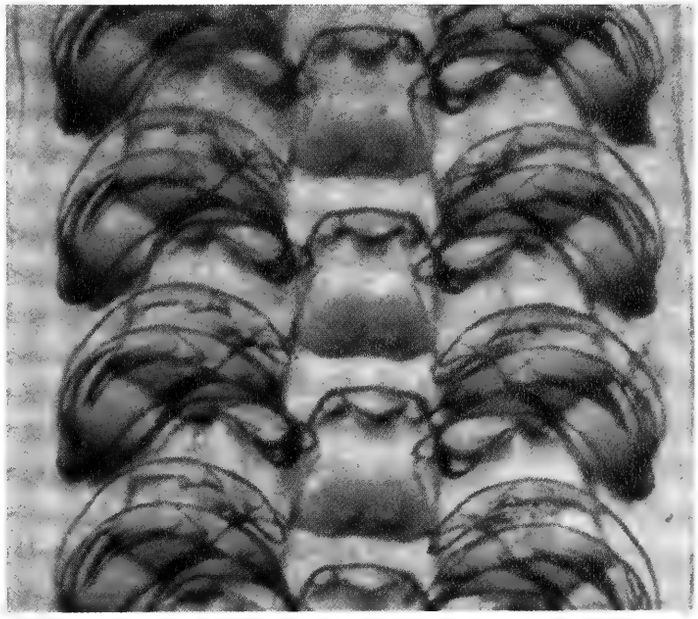


Fig. 19 (above) A radular mount of *N. piperata wilkinsi.*

from deep water. It only remains now to establish where *N. subcarnea*, *N. albata*, *N. emblema*, and *N. dissecta* belong, but this will be a challenge due to the paucity of available specimens. I realized long ago that classification by shell alone was impossible, as did the much-maligned Griffiths. The dangers of not getting the taxonomy right before molecular studies are undertaken or published are well known and this is the reason I have been saving foot and mantle tissue from as many locations as possible. The use of animal and radular characteristics for species determination for *Zoila* and *Cypraeovula*, which also have direct development, have been shown to be of limited use and it is fortunate that this has not proved to be the case with *Notocypraea.*

It is only possible to publish a small sample of the material I have to present on an almost 40 year study of *Notocypraea.* This article needs to be read in combination with all previous articles listed in the references, as well as the references listed with earlier articles. Criticism needs to be constructive based on the study of

Shell Reg No	Male	Female	Shell length	Radula Length	Rows per mm	No of rows	Radula width	Central Tooth Length	Central Tooth Width
C 34		PF	20.2	12.0	5.3	63	640	158	153
C 117		PF	21.1	10.2*	6.1	62*	707	156	153
C 140	PM		21.1	8.1	10.2	83	422	90	100
C 120	PM		20.1	7.2	8.2	59	476	113	100
SW 250		F	21.8	11.8	5.6	66	640	147	137
SW 226		F	21.0	11.1	6.8	76	637	135	135
SW 229	M		20.6	8.9	8.1	72	435	110	110
SW 224	M		21.0	8.6	8.9	64*	488	113	105
ML 2	M		20.8	7.5	10.0	73	410	95	95

Table of sizes showing radular sexual dimorphism of the Port MacDonnell species X. Shells prefixed C are from my collection, P preceding F and M = Presumed. Shells prefixed SW and ML are specimens recently collected by Simon Wilson and Michael Lyons, and are known as male or female. Shells have been selected of similar length to highlight differences in radular size between male and female animals.
Total width, central tooth length and width are given in microns (μm). All other sizes are given in millimeters (mm). Asterisk * = not complete.

type material, original descriptions, and all related articles, and then on credible research, not on matters of opinion. Surely this is a basic rule of scientific enquiry. A computer-generated monograph of all my research is in preparation.

Many people have been most helpful during the course of this study. Ian Loch and Allison Miller of the Australian Museum, Shirley Slack-Smith and Corey Whisson from the Western Australian Museum, Bob Hamilton Bruce of the South Australian Museum, Dr. Richard Willan from the Northern Territory Museum, Kirrily Moore from the Tasmanian Museum, Felicity McEnnulty from the CSIRO for the loan of type specimens, radular slides, and important specimens essential for this research, Coralie Griffiths of Lakes Entrance for the loan of her deep water Bass Strait specimens, Chris Goudey for the loan of fossil specimens, Chris Rowley and the staff of the Invertebrates Section of Museum Victoria for unlimited access to collection material, the use of laboratory facilities, and Chris also for the facilitation of loans, Michael Lyons for the loan of specimens, and finally to Simon Wilson for the careful collection, photographing, preserving, and supplying me with animals matched to shells all in the name of science.

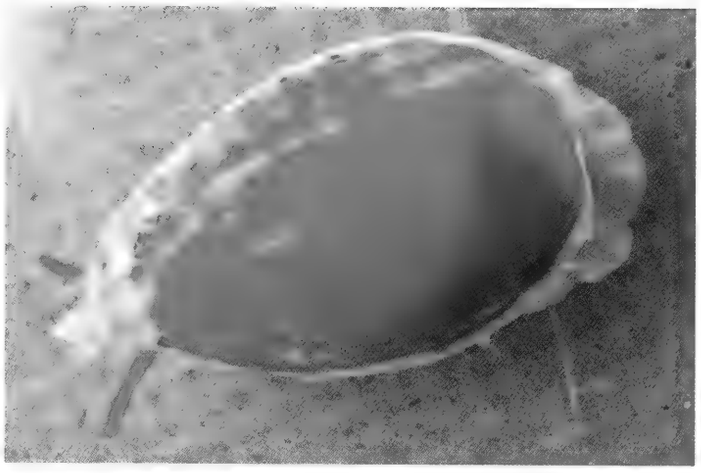


Fig. 20 A living *N. piperata*. The cleaned shell can be seen in both the 2006 and 2007 *American Conchologist* issues.

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John W. Kline, Pioneer American Shell Dealer

By Bill Michal

John William Kline (1824-1892) of Philadelphia is well recognized as a prominent pioneer in American numismatics. It appears he may also deserve to be considered the earliest documented American seashell dealer. The title of this article and these opening words were chosen carefully to wave a couple of caution flags for the reader. The early portion of this account could easily suggest that the author has confused his collecting hobbies and sent it to the wrong journal for publication. Considering Kline's stature in the world of American coin collecting, however, and especially due to the unusual and circuitous path that led to this article, it seems only logical to begin in the numismatic realm. Every effort will be made to limit that content to important pertinent aspects. The other caution is that the research done for this piece has been relatively brief and the results are suggestive but clearly not conclusive. The decision to proceed with what is in hand can be defended by the words of Henry R. Wagner in "Bullion to Books," "It is not worthwhile to die while waiting to obtain the last two or three percent. Better publish what you have and let the other fellow add to it." This article is submitted in that spirit. Finally, it seems worthwhile to point out that while pursuing this primary topic, I chanced to learn of a very active collector of shells before the Revolutionary War who will be mentioned only briefly herein and probably deserves more careful investigation.

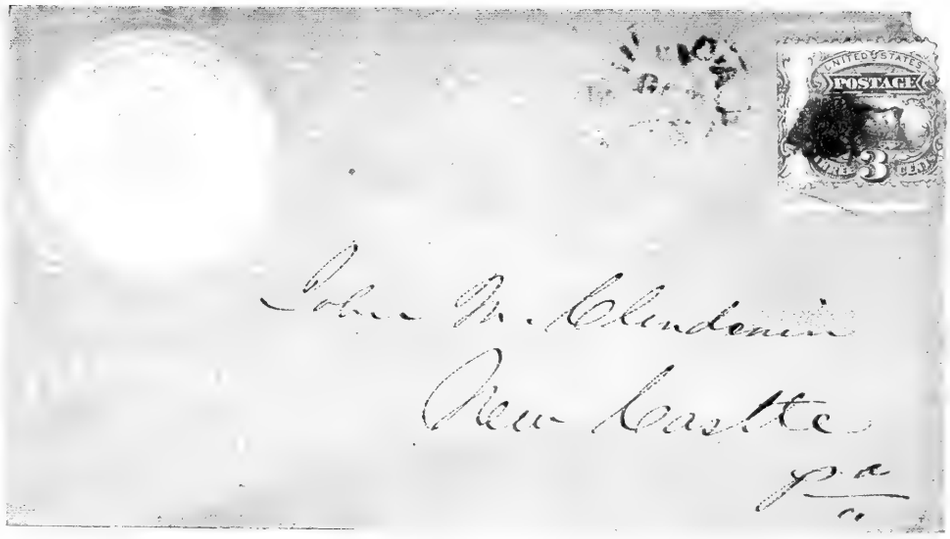

Fig. 1 Kline's Emporium advertising envelope, circa 1870. Author's collection.

Fig. 2 Portrait of John W. Kline as pictured in *Mason's Coin and Stamp Collector's Monthly*, March 1869, courtesy of Dr. J. J. Orosz. The sharpness is limited due to its production from an original half-tone photograph.

Particularly blessed is any collector who acquires a rare and fascinating item in one area of interest only to find it equally significant to another passion decades later. Figure 1 pictures just such a treasure, a circa 1870 envelope used by John Kline to advertise Kline's Emporium established in Philadelphia in 1857. In my coin collecting years, my prime area of interest was a study of the patterns and coins that led to "In God We Trust" being added to our coinage during the Civil War and then becoming our official National Motto nearly a century later. I also acquired US stamps and searched for Cachet First Day Covers that displayed that motto or closely-related ones. In 1977, a stamp dealer in Arizona with whom I had left my address offered me this envelope because of "In God We Trust" appearing above the simple profile sketch of George Washington in the upper left corner. In the lower left corner are the firm's name and its address at 212 S. 8th Street. Attractively-rendered across the top of the envelope is an intriguing list of the eclectic items in which Kline traded, "FINE STATIONERY, COINS, MEDALS, ENGRAVINGS, MINERALS, SHELLS, CONTINENTAL PAPER MONEY, INDIAN CURIOSITIES, & POSTAGE STAMPS." Researching Kline's life in the numismatic literature revealed that in 1855, at about 31 years of age, Kline had been the sole consignor to the first truly major coin auction in America. His collection contained an incredible array of rarities and its sale created a catalog of 101 pages listing 1,850 lots, stimulated attendance by collectors from a wide a geographic area, and produced a total financial yield that was not matched for several years. His photograph is shown in Figure 2, as it appeared on a photographic plate included in a numismatic journal of 1869. After the 1855 auction he dealt in rare coins for another 35 years, was the first person in America to reprint an earlier numismatic book, and by his death had accumulated several thousand contemporary auction catalogs. These preserved much of the early history of American coin collecting. Most of this information about Kline was acquired from a 1997 monograph by Dr. Joel J. Orosz. With its intriguing title, "The Curious Case of the Collectors Kline," it unravels a numismatic enigma worthy of Sherlock Holmes. John Kline performed one other very notable service that relates to both coins and shells, namely the issuing of two tokens in 1876 to celebrate our Centennial Anniversary while simultaneously advertising his emporium. One of these tokens pictured William Penn on the obverse. Photos of this token are shown in Figures 3

Fig. 3 (left) Obverse of Kline's Wm. Penn token of 1876. Courtesy of David Schenkman.
Fig. 4 (right) Reverse of Kline's Wm. Penn token of 1876. Courtesy of David Schenkman.

Fig. 5 (left) Obverse of Kline's Libertas Americana token of 1876. Author's collection.
Fig. 6 (right) Reverse of Kline's Libertas Americana token of 1876. Author's collection.

and 4. From almost any perspective the more interesting one featured a replica engraving of *Libertas Americana* copied from Benjamin Franklin's creation of a truly incredible medal to celebrate our most improbable victory in the Revolutionary War. Kline's *Libertas* token is shown in Figures 5 and 6. The reverse sides of his two tokens were identical and consisted of a listing of trade items that was quite similar to the list on his envelope and prominently included "SHELLS." For conchologists who might want to acquire one of his tokens, the Penn pieces are difficult to locate but the *Libertas Americana* pieces were struck in several metals, appear in coin auctions occasionally, and are not expensive.

While combing the above-mentioned monograph for facts about Kline, I learned that Orosz had written an earlier primarily-numismatic book on the fascinating Swiss-born Pierre Eugene Du Simitiere (Orosz, 1988). A talented artist and portraitist, in 1757 at 20 years of age, he left his native land to begin a 6-year natural history research odyssey of every major Caribbean Island. Then over the following 11 years he relocated another 12 times before finally permanently settling in Philadelphia in 1774. During all these travels, Du Simitriere collected, sketched, and made detailed notes for hoped-for future publications. Reading this earlier work by Dr. Orosz purely for my interest in coins, I learned that Du Simitiere had collected so many varied objects in such vast quantities that they finally consumed both his financial assets and his living quarters. Almost certainly from absolute necessity, in 1782 he opened his home and named it the "American Museum." [The dates mentioned above should direct our attention to the remarkable fact that he was able to keep his collection intact thru the entire Revolutionary War.] Under the heading of "Natural Curiosities, Marine Productions," the very first entry on a broadside announcing the museum opening was, "A very large & complete Collection of the most rare and beautiful Shells." This was followed by lists of several other marine items. In what appears to be an obvious reference to fossil shells, several entries later under "Petrifications," he listed "subjects that once belonged to the sea such as shells." Thus it appears almost certain that Du Simitiere was actively collecting shells as early as 1757 in the Caribbean and continued to do so after reaching America. How early he might rank amongst American shell collectors I will leave for others to research.

When I acquired the envelope advertising Kline's Emporium 32 years ago and his token sometime thereafter, (sadly) I was not yet a shell collector. Thus his mention of shells was only of passing interest. Looking at these items recently, I saw them with different eyes. I almost immediately wondered whether Kline conceivably could have been the earliest-documented shell dealer in America. Fully expecting to be quickly disillusioned, I sent an email inquiry to a scholarly shell dealer friend. I was tantalized by his response that in "A History of Shell Collecting," S. Peter Dance had accorded that title to a dealer who had started his business shortly before World War II. That would have been about 80 years after Kline established his emporium. A few more quick and easy email contacts failed to uncover a viable competitor for Kline.

Because of Kline's location and the thriving community of shell aficionados there now, I contacted several individuals in Philadelphia in hopes of finding evidence of Kline's shell activity and information that would help with dating his dealings. Susan Glassman at the Wagner Free Institute and Eileen Mathias at the Academy of Natural Sciences graciously searched their records in vain for donations or purchases from Kline or his emporium. I also contacted our editor, Tom Eichhorst, who very helpfully posted the basic question on Conch-L. I am indebted to all who took the interest and time to respond. The ensuing flurry of messages revealed many interesting bits of information, but nothing to discourage the writing of this article.

Now let's focus on the dated information we have. The historic 1855 coin auction mentioned earlier contained nothing but numismatic material. Kline's Emporium was established in 1857 (see Fig. 7). This charming image is either a trade card he issued

or an advertisement he ran. Unfortunately, it carries no date other than when the firm was established. While it seems reasonable to presume the emporium might have dealt in shells from its beginning, thus far that fact has not been substantiated. Even though the postmark is illegible, we can fairly accurately estimate the mailing of his envelope that advertised shells at about 1870 based upon its stamp. Even more precise is an advertisement for Kline's Emporium that ran in the August 1870 issue of "The American Antiquarian," which also prominently listed shells (see Fig. 8). His two tokens also offered shells but were not issued until a few years later in 1876. What evidence do we have between 1857 and 1870? On April 16, 1866, about eleven years after his initial auction, Kline consigned more coins to an auction conducted by Thomas Birch & Sons in Philadelphia. From a coin standpoint it was a mere shadow of the earlier sale, but Dr. Orosz kindly searched that auction catalog for the purposes of this article and reports that the following shell-related items were included. Lot 258: "Box of Shells." Lot 261: "Fossil Clam and Oyster." Lot 292: "Large Petrified Shell." Lot 294: "Lot of Coral." Lot 341: "Box Shells & C" (the C perhaps referring to coral). This clearly establishes that Kline sold shells as early as 1866, but in this auction he did so in a manner that could possibly be interpreted as the actions of a collector rather than a dealer. I would offer the opinion, however, that the selections and combinations of shells offered in this sale (as well as the one mentioned below) seem more typical for offerings from a dealer than from an experienced and knowledgeable shell collector. Since the thrust of this article is to attempt to document someone functioning as a shell dealer, after weighing all the points above, these facts would seem to qualify only as strongly suggestive evidence.

Fig. 7 Kline's Emporium trade card or advertisement, undated. Courtesy of Wendell Wilson, www.mineralogical record.com

KLINE'S EMPORIUM,

No. 212 South Eighth Street,

PHILADELPHIA, PA.

DEALER IN

ENGRAVINGS, MINERALS, SHELLS, POSTAGE STAMPS AND CURIOSITIES.

A LARGE ASSORTMENT OF PORTRAITS AND VIEWS ON HAND FOR ILLUSTRATING.

THE BEST STAMP ALBUM OUT FOR $1.25 AND $1.75

(Postage 20c. extra.)

Fig. 8 Advertisement in "The American Antiquarian", Volume I, August 1870. Courtesy of Dr. Orosz.

The same can be said for one other auction consignment that (for these attempts at dating) suffers from the additional fact of falling slightly after the 1857 to the 1870 window of time. Because the contents and the terminology used will be of interest to conchologists, I will list them here. A broadside prepared for the April 8, 1871 sale by Bangs, Merwin & Co. in New York City, contained material attributed to Kline. In a total of 22 lots under the heading of "Curiosities" were (spelled thusly) "5 boxes of Japanese Birds & Flowers made of shells, 2 large shells-Queen Concks, 2 large shells-Purple Cowrie, Large piece of Red Coral-rare, One large shell-White Murex, Pearl Clam Shell-very fine, 4 Shells- Haleotus, 3 Shells-Golden Dolphins, 1 piece Coral-Mushroon-very fine, Shell-Scorpion-large, 2 Shells-Rose Murex, 1 Shell-Black Murex, 2 Shells-Blood Haleotus, 1 Shell-Horse Hoof-very fine, 2 Shells-Turk's Cap, 2 Shells-White Murex-fine & large, 2 Shells-Cameos-very fine, 2 Shells-Pearl Pyramid, Shell-Large Scorpion, 2 Shells-Scorpions-very fine, Shell-Horse Hoof-very fine, Shell-Large Crown Imperial-splendid." Attempting to more precisely document dealer activity within this window of time, a study of Kline's listings in "McElroy's City Directory of Philadelphia" still paints a cloudy picture. He seemed to choose how to list his firm on a very shifting, willy-nilly basis. In those city directories, the first time shells are specifically named was 1868, but as early as 1864 his lists included a wide variety of items very reminiscent of what appears on the Kline's Emporium envelope. Until more data surfaces, it seems fair to state that Kline could have started dealing in shells as early as 1857 and almost surely did so by 1868.

What about other individuals or firms documented as shell dealers earlier than the data we have on Kline? Most of the responses I received from my inquiries and from the Conch-L posting suggested dealers far later than Kline. A few mentioned individuals from the late 19th Century. Henry A. Ward opened Ward's Natural Science Establishment in Rochester, NY, in 1862.

Incredibly, the firm is still in business. A call to ask if they were able to document when the firm began to sell shells revealed that all the company catalogs and records had been donated to the Rush Rhees Library at the University of Rochester. The on-line library information states that the firm suffered a major fire in 1930 during which many records were destroyed. The library staff members were very accommodating, but unable to document any shell dealings earlier than when Kline is known to have started. The earliest document in their files that could relate to our topic was the 1876 "Catalogue of Invertebrate Animals, (Corals, Shells, Crustaceans, etc.) that was listed for sale at Ward's Natural Science Establishment." The first sentence of its preface states, "In offering, to my clients throughout the United States, a catalogue of a new and most important department of my Natural Science Establishment, I am well aware of the magnitude of the undertaking."

In summary, John W. Kline of Philadelphia, who was quite prominent in the numismatic arena, can also reasonably be touted as a good candidate for being the earliest-documented shell dealer in America. In 1857 he established Kline's Emporium which traded in a wide assortment of items, the general nature of which fit logically with also dealing in shells. That same firm prominently listed shells in its later advertising. Kline himself is known to have sold shells via an auction at least as early as 1866. It is hoped that calling this attention to Kline will soon result in someone in the Philadelphia area discovering evidence that will move that date back much closer to 1857. At the time of preparing this article, no earlier dealer has been documented.

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River Campus Libraries, University of Rochester, www.library.rochester.edu/index.cfm?PAGE=1201#W See Ward's Natural Science Establishment and Ward's Natural Science Establishment, Additions.

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Marine shells of northeast Florida: a chronicle of the campaign

by Harry G. Lee

What turns out to be a sentinel event in the Jacksonville Shell Club's history was a stimulus delivered by Mr. William G. Lyons, a noted research malacologist and senior administrator with the Florida Marine Research Institute, State of Florida Department of Natural Resources (DNR), St. Petersburg Beach (Lyons, 1975). Citing the lack of information on the molluscan fauna of our region of the state, the value of the untapped knowledge and experience of our club members, and his read on the capability of our membership to carry through the project, he "suggested" in the May-June, 1975 issue of our club's newsletter, the *Shell-O-Gram*, that we publish a report on the marine shells of northeast Florida. With the exception of meeting (many) a deadline, we followed Mr. Lyons' guidelines in the production of such a work, which was delivered from Drummond Press (Fig. 1) to the writer on May 28, 2009, a mere 34 years after Bill's gauntlet was thrust.

Our crowd was a mostly young and ambitious lot, pretty well tested in fieldwork, including SCUBA diving and even a little dredging. We had strength in numbers, which abiding asset, perhaps more than any other, kept the momentum going when distractions, setbacks, and various other obstacles intervened. Figure 2 shows Bill Lyons during the 1975 Shell Show, discussing the project with some of our beachcomber-dredger-diver collectors.

Very early on we defined the geographical limits of the project to be the mouth of the St. Mary's River (Florida-Georgia border) south to the Flagler Co. line and offshore to the vicinity of the outer Continental Shelf, arbitrarily set at the 30-fathom isobath, and all estuarine waters within Nassau, Duval and St. Johns Counties. By the end of the year the first short species-list appeared in the *Shell-O-Gram*. Over the next few years a cumulative list, eventually arranged in phylogenetic order, would be published. Each time a few to several dozen entries were installed. By 1978 over 200 species had accrued.

About that time, members, including the late June Dawley (see Lee, 1995), Clyde Hebert, and Bonnie Holiman (see Lee, 1993), began sorting through what was familiarly known as "Yocius grunge." Ted Yocius (1934-2008) was a shrimp trawler who lived in St. Augustine and actively dredged for marine shells, principally off St. Johns Co. He sold culled specimen shells as well as unsorted dredged sediment and related debris to collectors around the world. The peak of his activities was in the 1970's. This operation was a major innovation for our project, and it brought into focus a neglected element of the fauna, microshells, which ultimately proved to be a signature feature of the published account and was largely responsible for the molluscan biodiversity. The fever spread quickly, and nearly a dozen club members got involved with bushels of "Yocius grunge." The cumulative species list swelled quickly and within a few years we were at 400 species.

The beginning of the second quarter of the 1980's saw the resurrection of the long-idle northeast Florida Calico Scallop fishery and, within a few years, quite likely over 100 tons of molluscan bycatch were reviewed and culled by over two dozen shell club members and friends aboard the trawlers (Fig. 3), ports of call in Jacksonville and St. Augustine, dumpsites, and deliberate landfill operations (Figure 3a). Interviews with boat captains allowed a measure of precision in determining the origin of the catch. Among the familiar faces at the "scallop dumps" were Nellie Hawley, Charlotte Thorpe, and Henry McCullagh (see Lee, 2003), the late Norma Bulock, and a newcomer, the late Betty Hunter (see Lee, 1997). Unanticipated subsets of material from this phase of our collective good fortune came from nearly 1000 batfish (Fig. 4) and a somewhat smaller number of heart urchins, *Meoma ventricosa* (Lamarck, 1816), in the scallop bycatch. These were dissected by the writer and June Dawley respectively, and many thousands of specimens belonging to no fewer than two hundred species of mollusks, mostly "micros," were harvested from these little molluscan predators.

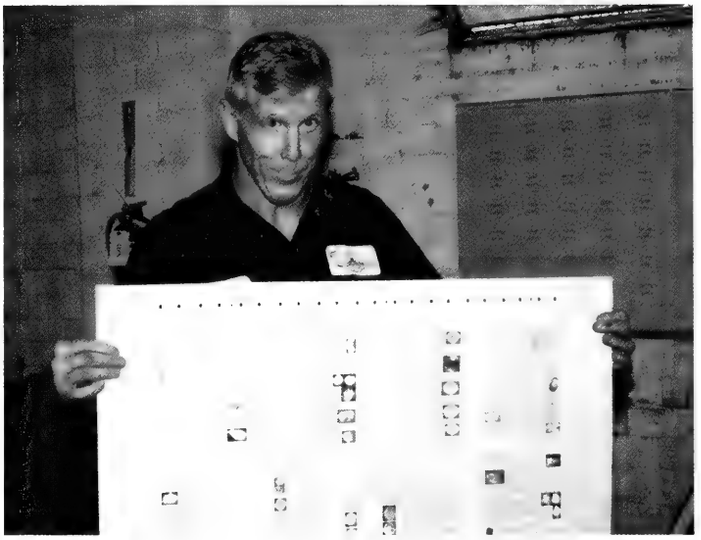

Fig. 1 (above) The proofs deleivered from Drummond Press. After some three decades we are ready for the final product.
Fig. 2 (below) The 1975 meeting to discuss the project; from left to right: Bill Lyons, John Lott, David Pugh, and the author.

Fig. 3 (above) Gayle Motes at work on a active scallop boat sorting through literally tons of molluscan bycatch.
Fig. 3a (below) Digging through a landfall operation for that elusive treasure.

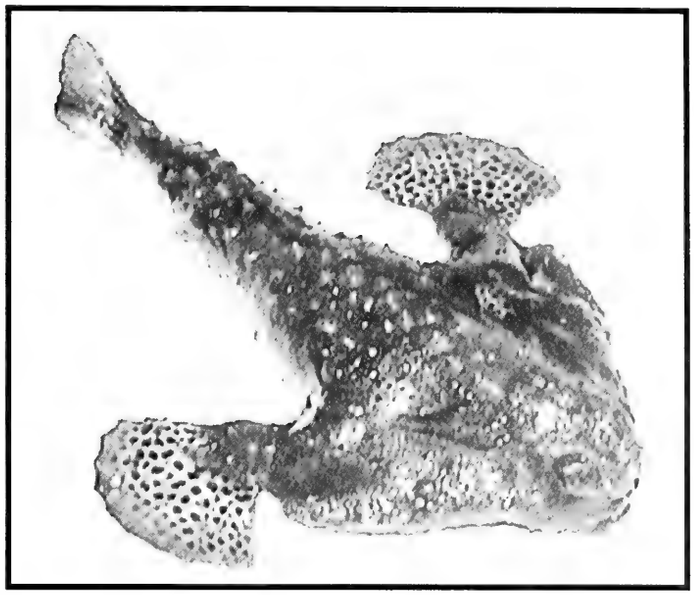

Fig. 4 (above) The nearly 1,000 batfish (plus other bottom predators) yielded a great number of molluscan species from their stomach contents.
Fig. 5 (below) The short-lived whelk fishery at Fernandina Beach provided a number of specimens.

A whelk fishery (Fig. 5) based in Fernandina Beach provided some of our team with shells after the flesh was removed during processing. As with the scallop trawling, this enterprise proved to be ephemeral, and we collectors were forced to move on in our pursuit of easy pickings.

Another unforeseen opportunity exploited by us Jacksonville Shell Club members and friends intermittently during the 1970's to 1990's was the "beach renourishment" initiatives along the shoreline of southern Duval Co. Marine sediment was excavated from depths of approximately 10 fathoms situated about ten nautical miles offshore, barged to a point about 100m outside the breakers, and pumped onto the shore through pipes about 1.5m in diameter. Over 10,000,000 cubic meters of sediment was transferred during at least nine contracted campaigns (Gail Gren, Army Corps of Engineers, Jacksonville, personal communication, 23 Jan. 1989). Dozens of species of mollusks never previously found on these oceanic beaches were easily collected, some actually abundantly, during these ecologically disruptive but scientifically rewarding activities. Among the several participating in this free-for-all were Judy Blocker, Billie Brown, and Bill Hansen. None of us active during those days will forget the extensive and meticulously-assembled collection of micromollusks from 16th Avenue S., Jacksonville Beach, made by Norma Bulock, which was begun in the early 1980's.

Around 1986, a fisherman-turned-net-maker, who happened to be a patient of mine, Bill Skipper of Fernandina Beach, surprised me with a gift of some 10,000 specimens of micromollusks he had extracted from thousands of seastars, *Astropecten articulatus* (Say, 1825), trawled in about 5 fathoms off Big Talbot Island. Of the approximately 180 species in this trove, many were new to our northeast Florida records, which continued to accrue almost every day.

Various watercraft were employed for the collection made over the long course of this study, but the most consistently and frequently put to use was "Reef Raider II," docked in Mayport, FL, with Captain Vic Lloyd of Jacksonville Beach at the helm. Most of

Fig. 6 The author signing copies of his book at the Jacksonville Shell Club's 43rd Shell Show. The culmination of a lot of effort by some dedicated shell collectors.

our collecting by SCUBA and much of dredging was conducted from this vessel, specifically designed as a dive and commercial-angling craft. Charlotte Thorpe accounted for the lion's share of the dived and dredged material, including material from other, smaller, vessels she operated offshore of Duval Co.

By the time full measure of the material produced by the work outlined above was taken, it was apparent that the writer had seen tens of thousands of specimens collected from over 100 stations by no less than 63 individuals in the long course of the "collection phase" of the project, which continued into the month preceding publication. At final tally, accounts of 804 species would appear in the book.

Identification was accomplished by reference to standard books, literally hundreds of relatively recent periodical publications, and more than a few older, often obscure and rare works. Of particular value in this regard was the Malacolog 4.1.0 [now 4.1.1], a database created and maintained by Dr. Gary Rosenberg at the Academy of Natural Sciences in Philadelphia. This resource treats all western Atlantic marine mollusks (Rosenberg, 2005, 2009). Visits were made on one or more occasion to the following museums to review their holdings, principally type material: Academy of Natural Sciences, Philadelphia; Bailey-Matthews Shell Museum, Sanibel, FL; Charleston Museum; Florida Museum of Natural History, Gainesville; National Museum of Natural History (Smithsonian Institution); and the Florida Dept. of Natural Resources, St. Petersburg. Except for a few records provided from the Florida Department of Natural Resources/SEAMAP inventory provided (and vetted) by Bill Lyons, all material presented was directly examined and identified by the writer.

The illustration of this report was originally the responsibility of Allan Walker, with the writer essentially serving as an assistant. With his wife, Hazel, Allan is an Honorary Life Member of the club and at the time he was a professional news photographer. We had assembled a portfolio with images of about 250 species when Allan was stricken with a debilitating stroke in 1994. Unable to carry on without Allan's skillful service, I let this aspect of the project lag. Publication, expected to be imminent, was essentially put on hold.

Most of the final fifteen years was essentially devoted to fleshing out the text of the report to keep pace with the burgeoning relevant literature. Essentially every species account saw some refinement and many were greatly expanded as published work by others and consequent changes in my perceptions were incorporated into the text. When I'm pressed for a rationale for the dilatory appearance of the book, I think I can safely say that what would have appeared in print in say, 1995 would have been riddled with errors. Hopefully that won't quite be the case with the 2009 book, 14 years hence. Retrospection is consistently 20/20.

Over the final year or so of the project, particularly during the home stretch of March and April, 2009, a *dei ex machina* phenomenon occurred. Amy Benson, of the U. S. Geological Survey, Gainesville, deftly drew a digital map to my specifications, and a pair of skilled photographers, Emilio Garcia and Charlotte Thorpe, picked up not too far from where Allan Walker had left off. They provided the images for over 300 previously unfigured species in a matter of about six weeks. By any measure this was an awesome feat. I shall ever be indebted to these guardian angels! The timing couldn't have been any more exquisite - the May 28 delivery was less than 24 hours before the doors opened to the Jacksonville Shell Club's 43rd Shell Show - and in its Golden Anniversary year (Fig. 6), where the book made its debut!

Many lessons came from this chronicle, but the spirit of cooperation and the power of amateur devotion seem to resonate throughout the campaign. Bill Lyons' read on the Jacksonville Shell Club was on target and we can all give him credit for setting the bar just high enough to permit ultimate, I didn't say timely, success.

Photo credits: Fig. 2: Allan Walker, Figs. 3, 5: Charlotte Thorpe, Fig. 3a Jane Zager, Fig. 6 Vicky Wall. Figs. 1, 4 by author.

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Harry G. Lee
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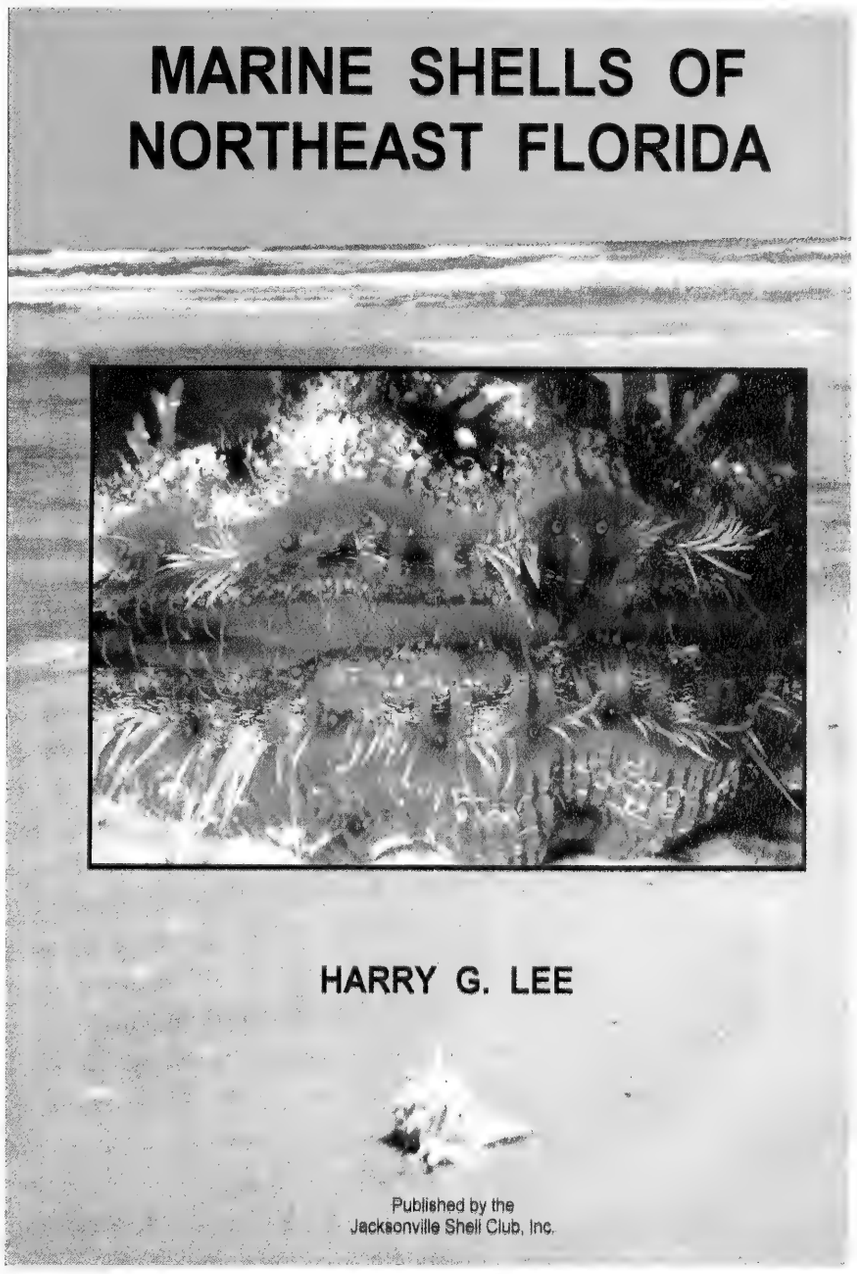
Book Review: Marine Shells of Northeast Florida

By Harry G. Lee, 2009

Jacksonville Shell Club, Jacksonville, FL
ISBN 0-9671254-0-5, pp. 204, approx. $40



Every member of Conchologists of America who has attended an annual COA convention in the last few years knows about and has been waiting for this book. Harry Lee is well known in our community for both his open friendly demeanor and his vast knowledge of seashells (not to mention a library that would do any institution proud). The story of the development of this volume is told elsewhere in this magazine by the author. Here we will just take a look at the finished product, an in-depth survey of marine shells from the coastal area of NE Florida from approximately Nassau County, Florida (the Florida-Georgia state line), south to Flagler County, Florida (approximately 75 miles south of Jacksonville), and from estuarine waters out to the 30-fathom isobath.

The species accounts start with no. 1. *Ischnochiton papillosus* (C.B. Adams, 1845) and end with no. 798, *Octopus giganteus* A.E. Verrill, 1897. That is an amazing number of species (there are actually more than 798 species listed as some species were inserted after the numbers had been set, each indicated by a letter "a") for an area that extends along just over 130 miles of coastline! Most species are illustrated in black and white with an additional 19 color plates (107 images) showing some of the more common shells encountered in the area and some images of living specimens. Families are presented in phylogenetic order with genera and species listed alphabetically. Each is listed by the scientific name (and author), followed by the official vernacular name, frequency of occurrence, maximum size recorded, locality data, and comments – including a reference to the color plate, if applicable, and quite often a link address to relevant coverage on the Jacksonville Shell Club web page (http://jaxshells.org).

This book is surprisingly useful for identification. At first I was put off by the small black and white images (a reason the price is so reasonable), but then I pulled out some Florida grunge I had and found that a 30mm image in the book is really a respectable enlargement when the shell is only a few millimeters in size. Few of us think we need much help in identifying the larger more common Florida shells as they can be found in a couple of dozen books around most shell collector's homes. Still, you might find a surprise or two as the author has the most current information. The micros, on the other hand, have always proven most difficult and with "Marine Shells of Northeast Florida" I at last have in hand a means of actually adding a name to data slips that had been restricted to locality information. Thank you Harry and all of the others involved in this project.

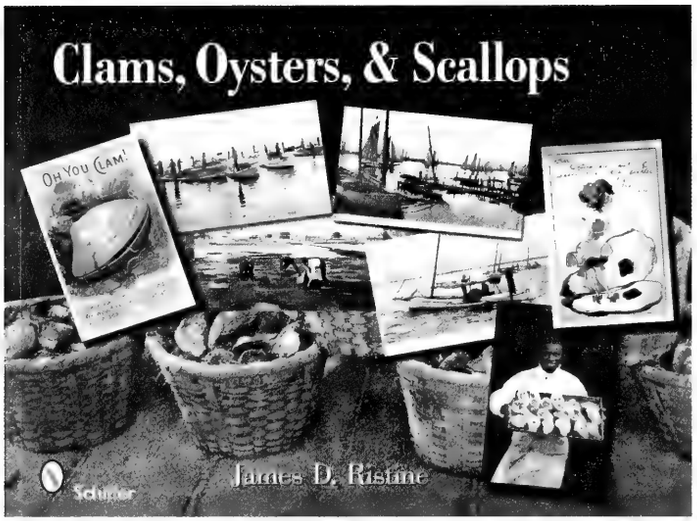
Finally, I offer a few words about the comments section of each species entry – a section that truly multiplies the value of this book. Here you may find clarifying notes on morphology, references where more information may be found, and discussions of a species' natural history. You will also find comparisons between similar species and more importantly, characters to use to distinguish between similar species. There are anecdotes from earlier writings and a thorough taxonomic history if the name of the species is or was in question. This makes for some fascinating reading. There is a wealth of information in this small volume, $40 very well spent.

Tom Eichhorst

Book Review: Clams, Oysters, & Scallops

By James D. Ristine, 2009

Schiffer Pub., PA ISBN 978-0-7643-3160-2
pp. 128, approx. $25.00
www.schifferbooks.com



This gem of a book tells pretty much the entire story of clams, oysters, and scallops in North America, through the use of post cards. The author calls it an illustrated album, but it is much more than that. The book is an album of post cards, new and old, each relating to clams, oysters, or scallops, but the captions for the post cards plus a lot of explanatory text contain fascinating facts and interesting tidbits of molluscan lore.

The book is divided into eight chapters plus a bibliography and two small sections on the history of post cards and trading cards. Chapter headings include: Claming the East Coast, Claming the West Coast, Freshwater Claming, Oysters and Oystering, Scallops and Scalloping, Feasting on Shellfish, Shellfish Humor, and Selected Shellfish Recipes. All told using post cards.

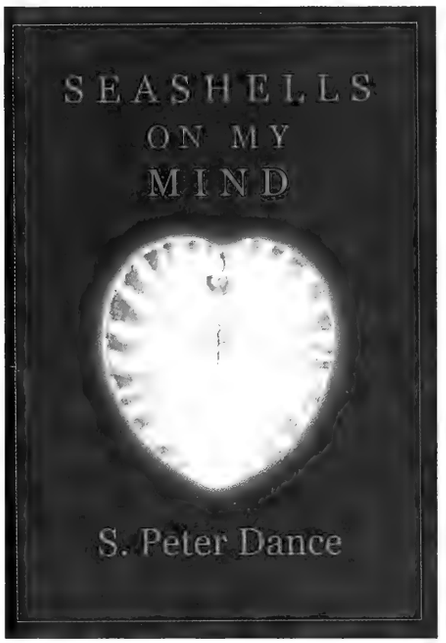
There are over 475 post cards illustrated, from the 1800s to the present day, and each one graphically displays something of the relationship we have with these bivalves. The eclectic images, each with an explanatory caption, vary from mountains of oysters in Hampton, Virginia (1920) to a beach scene painted inside a scallop shell (1885); or the Glenn Island Casino and Clam Bake in New York (1912) to the Union Oyster House in Boston (1960); or Seashells from Florida (1969) to Clamming the Mudflats in Maine (1910). There are also humorous cards that vary from bad puns and jokes to images of giant geoducks (the size of a pickup truck). Interspersed with the various images is text that explains the history behind the images and the natural history (using scientific names) of the various species involved.

I began this book thinking to find a couple of interesting images, but I ended up reading it for the wealth of information presented. This is a fascinating, highly recommended book.

Tom Eichhorst

Book Review: Seashells on My Mind

By S. Peter Dance, 2009



Shell Island Resources, Inc.
216 Robinson Drive Algona, Iowa 50511
ISBN 0-9656091-4-6, approx. $10, pp. 56

S. Peter Dance is a man of many talents. Having tenured as curator of mollusks at prestigious museums in the UK, he became an accomplished writer and authored or co-authored a number of shell-related books. He is also a talented artist in the fields of pen-and-ink and watercolor, and a published poet. Recently, he exquisitely combined art and poetry to decorate the pages of a volume of shell-related poetry and prose, entitled "Seashells On My Mind."

Peter selected a dozen lovely shells and created watercolor drawings and poems about each one. Each watercolor encompasses a full right-side page with accompanying poem on the left, and each offering is followed by a two-page anecdotal description along with a photograph of the featured shell. A well-crafted introduction and themed poem start off the 56 interior pages, and the title page features a full-color oval watercolor that gathers all the book's shells into one work of art.

In his septuagenarian years, Peter Dance has become fond of reminiscing about a lifetime of collecting, working with, and exploring the world of seashells. He expertly weaves memories and scientific data together, both in print in his recent books, "Out of My Shell" and "Beach Treasures of the Gulf Coast" (With Harlan Wittkopf), and when captivating audiences wherever he has a speaking engagement or a listening ear.

With this slender volume, Peter Dance seems to answer the collective reasons why so many become shell collectors; his lines of poetry express better than plain language the almost surreal beauty of seashells.

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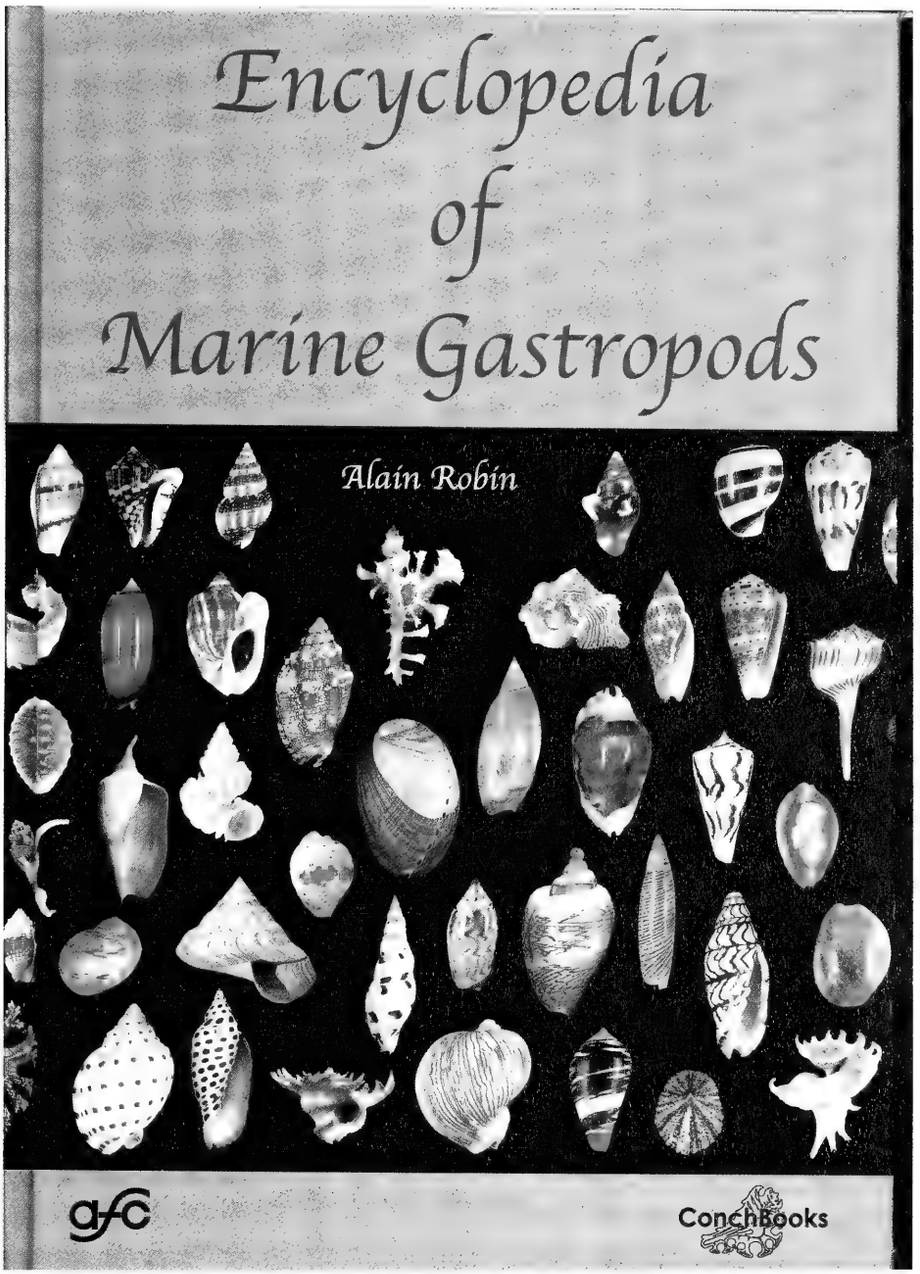
Book Review: Encyclopedia of Marine Gastropods

By Alain Robin, 2008

Conchbooks, Germany
ISBN 978-3-939767-09-1
pp. 480, approx. $120



This very important volume should have been reviewed last year. Since its publication it has mainly gotten notice through word-of-mouth, and it deserves far better. This is an identification book that has sorely been needed for a number of years as shell collectors had to depend upon a venerable but aging "Compendium of Seashells" by Abbott and Dance, or even "A Collector's Guide to Seashells of the World" by Eisenberg, as general or worldwide shell identification books. Both were first published in 1981 as identification guides for shell collectors, and both are now seriously dated. The "Collector's Guide" only illustrates 2,600 species and was never updated. The "Compendium," with over 4,000 species illustrated, was issued in a number of subsequent editions after 1981, but the last substantive changes (errata only) were published in the third printing, 1986. A lot has changed in last couple of decades, and while the "Compendium" and the "Collector's Guide" deserve a place on every shell collector's bookshelf, Alain Robin's work is a most welcome and needed update and revision.

The "Encyclopedia of Marine Gastropods" has over 12,000 color photographs on 461 plates. Over 5,200 gastropod taxa from around the world are beautifully illustrated in crisp detail with most shown in both dorsal and ventral views. As previously stated, this is an identification book. You will not find chapters on taxonomy or the natural history of intertidal mollusks, but you will find the most recent scientific name, general locality, and representative size for over 5,200 gastropods.

Most shells illustrated by Robin are from various collections of the members of the French Conchological Association (Association Francaise de Conchyliologie) as well as the Muséum d'Histoire Naturelle de Paris. This means the book contains generally collectable shells, leaving specialized shells such as micros to other venues. The shells are presented by family in phylogenetic order, then alphabetically by species (with some groupings by genus as well). The book has a thorough and user-friendly index and the plates have page numbers on the outer margin, making the search for the referenced page much easier than is often the case. Subspecies and forms (not to mention bivalves) are not presented, being left to more specialized books.

As can be expected, there are occasional errors, but these are surprisingly few considering the scope of effort and the evolving nature of molluscan taxonomy. Any errors are more than made up for by the excellent photography and the up-to-date taxonomy. If you collect or are interested in worldwide seashells, in other words if you are reading this review, then this is a book you need.

Tom Eichhorst

MOLLUSKS IN WONDERLAND: THE PELECYPODA-BIVALVIA DILEMMA

By Cléo Dilnei de Castro Olivera

"Would you tell me please, which way I ought to go from here?"
"That depends a good deal on where you want to get to," - said the Cat.
"I don't much care where –" said Alice.
"Then it doesn't matter which way you go," said the Cat.
(Alice in Wonderland, by Lewis Carroll)

Like the protagonist from the classic "Alice in Wonderland" by Lewis Carroll, we are constantly faced with the dilemma "which way should I follow." In science, especially in taxonomy, this also occurs. Having received, from several reviewers for various journals, the suggestion to replace the name Pelecypoda Goldfuss, 1820, adopted in my manuscripts, with the name Bivalvia Linné, 1758, I face this dilemma.

Discussions about the higher-rank names adopted in taxonomy are occurring among researchers who deal with several animal groups (Ghiselin, 1977). Among malacologists, the class of Recent mollusks with two valves has historically been called by various names. Among the principal names, the most common are Bivalvia (Latin: bi, "two," valve, "valve"), Pelecypoda (Greek: pelekys, "axe," podos, "feet"), Acephala Cuvier, 1798 (Greek: a, "absent," cephala, "head"), and Lamellibranchiata Blainville, 1824 (Latin: lamellae, "small blade," branch, "gill"); nowadays, the first two names are the most common. Among the key treatments, we have on one hand some authors who have adopted (*e.g.*, Allen 1954, Nicol 1964, Soot-Ryen 1966, Rios 1994, Pojeta & Stott 2007) or highlighted (e.g., Pojeta, 1971) the need to return to the term Pelecypoda. At the other extreme, several workers use the term Bivalvia (Scarlato & Starobogatov 1978, Hickman 1980, Schneider 2001, Ubukata 2003), and have suggested the renunciation of the term Pelecypoda (e.g., Cox 1960). It might seem that the International Code of Zoological Nomenclature (ICZN 1999) was developed in order to elucidate matters such as this and to promote stability and universality in the scientific names of animal groups. According to the Principle of Priority (ICZN 1999: Article 23), the valid name of a taxon is the oldest name available for this taxon. Nevertheless, the application of the Code is limited to taxa of family, genus, and species groups, and does not extend to names employed in any category above the family group. Thus, although there is a tendency, by analogy, to apply the same treatment to names above the family group, the Principle of Priority cannot be formally applied to the terms used for the group of mollusks treated here.

If the choice of which name is to be adopted is not supported by the Code, how can we reach a decision? The answer relies, in part, on the adoption of a name whose meaning preferably represents a feature that is exclusive to the group. Most authors writing in English have opted for the name Bivalvia, because this term is familiar to laymen (Newell 1965). On the other hand, carapaces, exoskeletons, or bivalve shells, rigid or flexible, involving all or part of the body, with different patterns of symmetry and anatomical orientation, of different organic and/or mineral composition, articulated or not, and with different types of growth, have arisen independently in several biological groups that are physiologically and anatomically quite different.

The number of known groups composed of organisms with two valves is rather large, *e.g.*, the lophophorate brachiopods (Phylum Brachiopoda) (Fig. 1), in which both the Class Articulata and the Class Inarticulata have a bivalve shell that could have arisen independently (Valentine 1973). Bivalve armor has also arisen independently among several groups of crustaceans; this armor may enfold the entire body, as in ostracodes (Class Maxillopoda, Subclass Ostracoda) (Fig. 2) and diplostracans (Class Branchiopoda, Order Diplostraca) (Fig. 3), or only part of it, as in phyllocaridans (Class Malacostraca, Subclass Phyllocarida) (Fig. 4). Even non-zoological groups such as the diatoms (Kingdom Chromalveolata, Phylum Heterokontophyta) (Fig. 5) have the body surrounded by two valves. It is, however, not necessary to go so far; even among mollusks the bivalve shell is present in gastropods of the genus *Berthelinia* Crosse, 1875 (Family Juliidae Smith, 1885) (Fig. 6), in fossil monoplacophorans (Runnegar & Pojeta 1974, Runnegar 1983, Thomas 1988), and finally in the Recent class of mollusks with two valves. Although space is insufficient for an exhaustive survey, it is not difficult to find in many fossil taxa, organisms that are enclosed by bivalve armor (*e.g.*, *Concavicaris* and *Arhouiella*, both crustaceans; and *Calceola*, a cnidarian). Furthermore, even the taxodont hinge of the mollusks of the class treated here finds its equivalent in other groups, such as the rows of curved teeth found in the strophomenidean brachiopods (family Strophomenidae King, 1846), in some ostracodes, and in fossil cnidarians of the genus *Calceola* (THOMAS 1988). There exist other structures that also have their functional equivalents, such as the hydrostatic skeleton (*e.g.*, the foot of the mollusks with two valves, the coelom of the brachiopods, or the mesoglea of *Calceola*), the adductor muscles that close the valves, the elastic ligament of the hinge, and several other features besides those of the shell. In part, such morphological similarities among aquatic organisms with two valves reflect the manifold possibilities that can be explored by a bivalve armor, and illustrate how several functional and structural requirements are resolved in the same way, with convergent solutions. Whether by biological factors (such as ancestry, growth pattern, or genetic potential) or by physical factors (such as the nature of the material that composes the body or the importance of certain geometric shapes), this evolutionary convergence reflects the narrow range of possibilities for variation that can fulfill the adaptive requirements of different organisms.

Bivalves not in Bivalvia

Fig. 1 Phylum Brachiopoda, Subphylum Rhynchonellata, Class Terebratulida: *Terebratulina retusa* (Linnaeus, 1758), image from Bio-Mar TCD Encyclopedia of Life, www.eol.org.

Fig. 2 Phylum Arthropoda, Subphylum Crustacea, Class Ostracoda: ostrocode (also spelled ostrocod) of unknown species, image from Virtual School Project, www.miljoare.no.

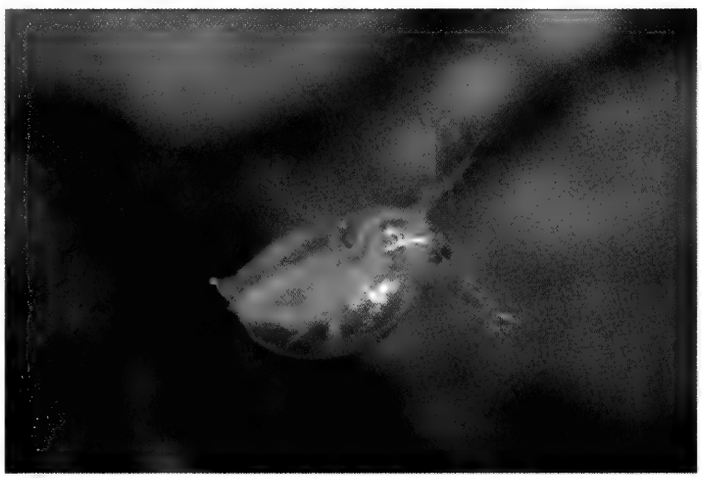


Fig. 3 Phylum Arthropoda, Subphylum Crustacea, Class Branchiopoda, Order Diplostraca: *Daphnia* sp., image from Bio-Mar TCD Encyclopedia of Life, www.eol.org.

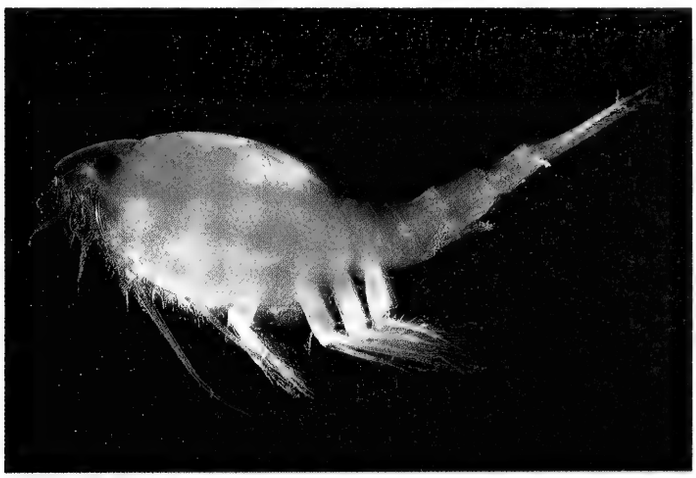


Fig. 4 Phylum Arthropoda, Subphylum Crustacea, Class Malacostraca, Subclass Phyllocarida, Order Leptostraca: *Nebalia bipes* (Fabribius, 1780), image from www.wikipedia.com.

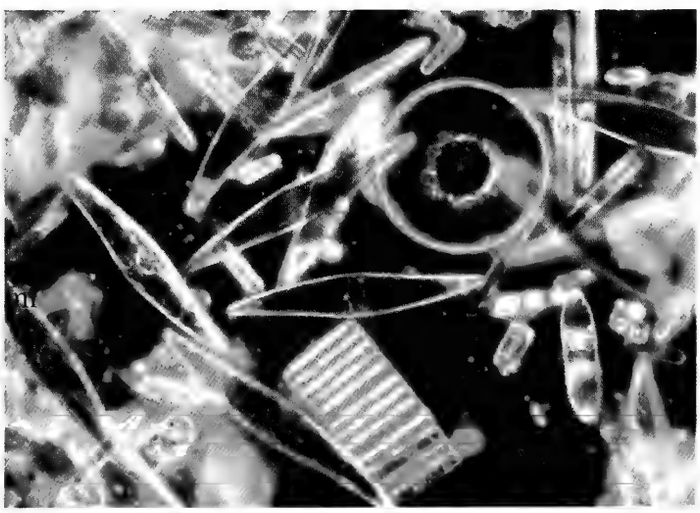


Fig. 5 Kingdom Chromalveolata, Phylum Heterokontophyta, Class Bacillariophyceae: marine diatoms, image from www.wikipedia.com.

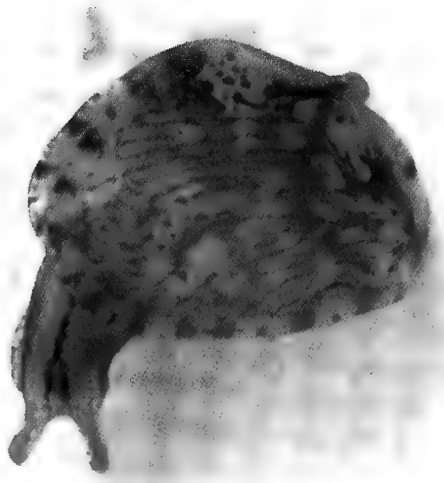


Fig. 6 Phylum Mollusca, Class Gastropoda: *Berthelinia caribbea* Edmonds, 1963, image by Robert Robertson.

If a bivalve shell is present in so many organisms and the name Bivalvia is so controversial, why advocate its use and reject the name Pelecypoda? It can be argued that the origin of the structure of the bivalve armor in different bivalve groups, and even within Mollusca, is still an exclusive feature in each group – and in fact it is. Nevertheless, the name Bivalvia alludes to bodies with "two valves;" thus, even with the biological exclusivity of the "bivalve armor," with several independent origins, there is no exclusivity in regard to the meaning of the term in the identification of the group. As previously mentioned, the presence of "two valves" is a very common condition in nature. Furthermore, it can be argued that the foot of pelecypods is also present in scaphopods, and even in Rostroconchia Pojeta, Runnegar, Morris, & Newell, 1972; or that the axe-shaped foot is not present in all pelecypods. Indeed, phylogenetic issues are extensive and there is at present a great debate about the origin of mollusks (*e.g.,* Salvini-Plawen 1980, Scheltema 1993, Haszprunar 1996, Giribet *et al.*, 2000) and the relationship of the classes within the group (*e.g.*, Runnegar & Pojeta 1974, Haszprunar *et al.* 2008). There does exist a consensus on the origin of pelecypods from monoplacophorans, subsequently passing through a Rostroconchia-like condition (Newell 1965, Taylor 1973, Runnegar & Pojeta 1974). Issues regarding the relationships of the Rostroconchia are still under discussion, however, with proposals that suggest the Rostroconchia either as a possible ancestor or as a sister-group of Pelecypoda + Scaphopoda (*e.g.*, Runnegar & Pojeta 1974, Schneider 2001), or also within Pelecypoda (*e.g.*, Starobogatov 1992). The key issue here, considering the Scaphopoda as a sister-group of the Pelecypoda [note that some authors have suggested other possibilities for the relationships of the scaphopods, usually not closely related to pelecypods (*e.g.*, Runnegar 1996, Haszprunar 2000, Steiner & Dreyer 2003)], is that a functional foot, used for burrowing, was developed in the lineage of pelecypods + scaphopods, or even earlier (Pojeta *et al.* 1972, Pojeta 1978, Runnegar 1978). This digging foot is a character present in a Recent group, pelecypods + scaphopods, which is supposedly monophyletic! This structure has also changed and diverged within this group, although it is clear that the foot of a pelecypod, whether it is homologous or not (*i.e.*, whether Scaphopoda is, or not, the sister-group of Pelecypoda), is not morphologically similar to the foot of a scaphopod. Moreover, even if the axe-shaped foot is not currently present in all pelecypods, this not does negate the exclusivity of the term for the group, because, even if this structure has been subsequently lost, modified, or derived, this does not erase its evolutionary history within the Pelecypoda. That is, regardless of the homology, or lack thereof, with the foot of the scaphopods, or any derivations in Pelecypoda, the axe-shaped foot of pelecypods, originated from a change in the ancestral digging foot, is a structure restricted to the pelecypods.

Therefore, if the name Bivalvia makes reference to a feature that is not present solely within the mollusks with a compressed body, with an axe-shaped foot, and without a head, why adopt such a name over another whose meaning – axe-shaped foot – is unique? The positive point for adoption of the name Bivalvia is the consistency with which the scientific community has used it in recent years to refer to this class of mollusks. Nevertheless, it is undeniable that both Pelecypoda and Bivalvia are, historically, the terms most often used to refer to the class.

Even with all of the progress in malacological studies, an important issue for this discussion remains unclear. If, for the scaphopods, the anatomy and morphology of the foot are well understood, the anatomy of the rostroconchs is still poorly understood and often speculative. Thus, if the foot of the rostroconchs is morphologically similar to that of pelecypods, the different proposals for the phylogenetic position of rostroconchs should directly influence the exclusivity of the meaning of the term "pelecypoda." Nevertheless, malacological studies still have not consistently resolved either issue – anatomy and phylogeny – about the Rostroconchia (*e.g.*, Runnegar & Pojeta 1974, Starobogatov 1992, Schneider 2001); and while these issues remain unresolved, any argument for or against the use of the name Pelecypoda that follows this line of thought is precipitate. Perhaps, this is the only point that remains unclear and lacking in information that could once again the resolve question of the applicability of the name Pelecypoda.

In the end, which term should we adopt? This decision is personal, not circumscribed by the rules of zoological nomenclature, and cannot be restrictive in zoological publications. It is left to the discernment of the reader to select a term that carries some meaning, rather than merely following a trend that persists through nomenclatural inertia, without taking into account current zoological knowledge. Even recognizing the importance of both terms, Pelecypoda and Bivalvia, in malacological nomenclature, in order to stimulate discussion and further reflection on this topic, I advocate here that the name Pelecypoda be preferred and employed in future publications. Unlike Lewis Carroll's Alice, we can clearly discern the path forward, which will open the way for new questions and discussions.

ACKNOWLEDGMENTS

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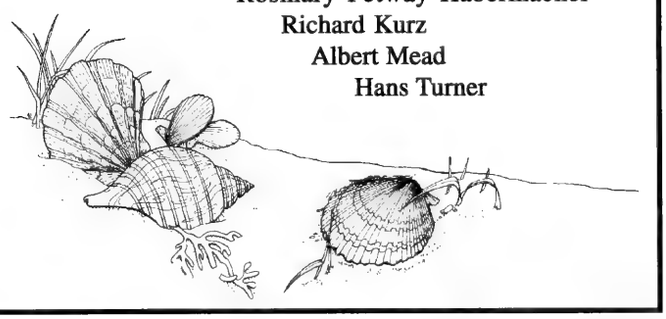
In Memoriam:

Rosmary Petway Habermacher
Richard Kurz
Albert Mead
Hans Turner



Cypraea (Eclogavena) dayritiana – Dayrit's Cowry

By Charles E. Rawlings, M.D., J.D.

Lynn Murphy and I have been dive partners for a long period of time, many years, in fact. Our normal trips are to locales that provide access to a large number of varieties of shells or to one particularly rare shell or shells. Lynn enjoys collecting; I specialize in photographing living shells. Our last trip, to the northern portion of Palawan, Philippines, was no exception. We were both looking for a specific volute from that area – *Cymbiola* (*Aulica*)*_palawanica* (Sowerby, 1825) – he to collect, me to photograph. While we did not find a living C. *palawanica*, we did discover multiple colonies of a small cowrie we later determined was *Cypraea dayritiana*, or Dayrit's cowrie. Accompanying this article are what I believe to be the first photographs of the living animal known as Dayrit's cowrie.

Cate described *Cypraea* (*Eclogavena*) *dayritiana* Cate, 1963 following his expedition to Northern Palawan, under the auspices of the Conchological Club of Southern California, in 1962. As noted by Cate, the first specimens of *Cypraea dayritiana* were found in very shallow water (1-2 meters) living in and amongst coral heads in a rocky substrate. The shells were found in crevices under rocks or pieces of coral, all in well protected areas. The first specimens were found off the islands, actually islets, of Marily, Demang, Batunan, Inlulucot, and Cagbatan. These islets are all in Coron Bay adjacent to the island of Busuanga. In fact, even today Dayrit's Cowrie appears to be confined to that general area or at least to Northern Palawan.

The shell of *Cypraea dayritiana* is well described by Cate and appears to be related to *Cypraea* (*Eclogavena*) *coxeni* Cox, 1873, *Cypraea* (*Eclogavena*) *luchuana* Kuroda, 1960, and *Cypraea* (*Eclogavena*) *quadrimaculata* Gray, 1824. It is also similar in appearance to *Cypraea* (*Blasicrura*) *interrupta* Gray, 1824; *Cypraea* (*Blasicrura*) *pallidula* Gaskoin, 1849; and *Cypraea* (*Talostolida*) *teres* Gmelin, 1791.* The shell itself possesses no mantle line and is pyriformly ovate with the base convexly flattened with numerous strong teeth that extend to both margins. The dorsum of the shell is flecked almost solidly with dark brown to black spots that give way to cream colored margins, base, and teeth. The shell is fairly small, from 15-20mm long, 9-13mm wide, and 7-13mm high. The shell is solid and has a robust character about it.

The shells we collected were no exceptions to the typical *C. dayritiana*. We managed to collect approximately ten specimens out of multiple colonies numbering well into the thirties. The collected shells ranged from 14mm to 22mm in length and averaged 10mm in width. The shells did not differ significantly from those first described by Cate and as illustrated in numerous shell books and appendices. The shells, although small, are robust and beautifully marked with flecks of dark brown to black on the dorsum that, in many places, almost merge with one another.

As for actually finding the shells, the term serendipity springs to mind. As I mentioned before, our goal on the trip was a living *Cymbiola palawanica* plus living *Melos* and unusual muricids. We were nearing the end of our trip, which had seen us steam from Coron and Busuanga to the northern tip of Palawan proper and back. Upon our return to Coron Bay, we decided to dive several of the wrecks during the last few days of our trip. One if the wrecks we decided to dive was a WWII Japanese gunboat or submarine hunter that sank in shallow water. The wreck is known as the East Tangat Gunboat Wreck. The bow of the wreck was in about ten feet of water while the stern was in sixty feet of water. The wreck was intact, sitting on the forefront of the reef. Just shoreward of the wreck was the inner lagoon consisting of a hard, rocky substrate, coral colonies, and multiple scattered coral heads and large pieces of dead coral. This particular dive site and wreck were located on the east side of Tangat Island.

It was in this location that we found Dayrit's cowrie, not on or around the wreck but in the shallows (1-2 meters deep) just shoreward of the wreck. Multiple colonies were found in and around

* All of these species were at one time placed in the genus or subgenus *Blasicrura* Iredale, 1930 (see Lorenz & Hubert, 1993; Beals, 2002), but most have more recently been assigned different genera or subgenera, including *Eclogavena* Iredale, 1930 and *Talostolida* Iredale, 1931 (see Lorenz, 2009). For clarity I have regarded these as subgenera within the genus *Cypraea*.

***Cypraea* (*Eclogavena*) *dayritiana* Cate, 1963, 18mm long, 11mm wide, photographed by the author at night in shallow water next to a WWII ship wreck. During daylight hours *the small colonies of C. dayritiana* were hidden in rock crevices, coming out at night to feed. This (and the specimen on the cover) are probably the first photographs published of a living specimen of this species.**

the coral heads, rubble, and rocky substrate. The cowrie was easily approached while snorkeling, although my collecting and photography were done using scuba gear. The cowries were located in the cracks and crevices of this locality during the day with the animals totally retracted into the shells. Once the sun set the animals emerged from the shell and the cowries became very active. Based upon this location, the cowries would be hidden during the day except from very determined collectors. In addition, this dive location became infested by a swarm of Philippine box jellyfish whose numbers, by noon, had reached into the hundreds.

As for the animal itself, a picture is worth a thousand words. As can be seen, the animal is similar to other cowries that hide in the cracks and crevices of coral rubble during the day inasmuch as it provides the perfect camouflage for the shell in and amongst the growth that covers such a habitat. The animal is of a uniform dark coloration deepening to black in most places. Covering this dark background is a pattern of white, yellow, and golden spots appearing much like a sprinkling of stars across the night sky. In addition, the animal is uniformly covered with papillae that appear much like yellowish hairs extending from the mantle. The proboscis is a uniform grayish-black with deep-set eyes on short stalks and golden orange sensory papillae. The animal is very interesting in and of itself and while appearing to be very similar to cowries in general, has a unique appearance all its own.

Recently a certain amount of confusion has arisen with regard to a new species that has been mistaken for or substituted as an unusual *Cypraea dayritiana* – *Cypraea* (*Eclogavena*) *dani* (Beals, 2002). As Beals (2002), Poppe (2008), and Lorenz (1993, 2008) note, *C. dayritiana* has never been discovered outside of the Coron area (northern Palawan and Coron Island), whereas the new species, named for Donald Dan, appears to have been found in extreme Southern Palawan (Balabac Island, see map). The new species is similar to *C. dayritiana* but is a larger shell with a much more pronounced dorsal hump and in general is a more robust shell. In addition, the teeth are more markedly pronounced and more numerous and the coloration is different, shading to a much more

melanistic shell. Moreover, the habitat of the two species is completely different. *C. dayritiana's* habitat is in shallow (1-2m of water) coral rubble and reef while *C. dani*'s habitat is in 60 to 150m of water where the shells are found by dredging. Finally, the point of origin is markedly different, *C. dayritiana* from the Coron area of the Northern Palawan and *C. dani* from Southern Palawan and/or Northwest Mindanao. Most recently, Lorenz (2009), consideres *Cypraea dani* a form of *Cypraea dayritiana.*

In conclusion, *Cypraea dayritiana* is a smaller sized cowrie from the Coron area that is found in coral and coral rubble, a shallow water habitat. We were fortunate enough on our last trip to Northern Palawan to collect a number of live specimens of this cowrie, allowing me the opportunity to photograph the living animal. As a result, the photographs accompanying this article are presumed to be the first photographs of a living *Cypraea dayritiana.* As noted above, these should not be confused with *Cypraea dani.* I wish to thank Mr. Lynn Murphy whose shell collecting acumen has enabled many a photograph of living shells such as the *C. dayritiana.*

Some *Cypraea* once grouped together in *Blasicrura*:

1. *Cypraea* (*Eclogavena*) *coxeni* Cox, 1873, 25mm, found under coral slab in 2 meters of water, Florida Island, Solomon Islands.
2. *Cypraea* (*Eclogavena*) *dani* (Beals, 2002), 17.5mm, found amongst coral rubble at night in 25 meters of water, Balabac Island, Philippines.
3. *Cypraea* (*Eclogavena*) *dayritiana* Cate, 1963, 18mm, found under a rock in 1 meter of water, northern tip of Palawan Island, Philippines.
4. *Cypraea* (*Eclogavena*) *luchuana* Kuroda, 1960, 21mm, found under coral rubble in I meter of water in shallow lagoon off Bolo Point, Okinawa, Japan.
5. *Cypraea* (*Eclogavena*) *quadrimaculata* Gray, 1824, 25mm, found under coral slab in shallow water at low tide, Mackay, Queensland, Australia.
6. *Cypraea* (*Blasicrura*) *interrupta* Gray, 1824, 17mm, found in a rock crevice in 3 meters of water, Sri Lanka.
7. *Cypraea* (*Blasicrura*) *pallidula* Gaskoin, 1849, 20mm, found amongst rocks and coral in 6 meters of water, Samar Island, Philippines.
8. *Cypraea* (*Talostolida*) *teres* Gmelin, 1791, 32mm, found in shallow water in rubble, Palawan Island, Philippines.

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Poppe, G.T. 2008. *Cypraea dayritiana* and *C. dani.* www.listserv.uga.edu – Conchologist's list, August 4, 2008.

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426 Old Salem Rd.
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336-725-6444
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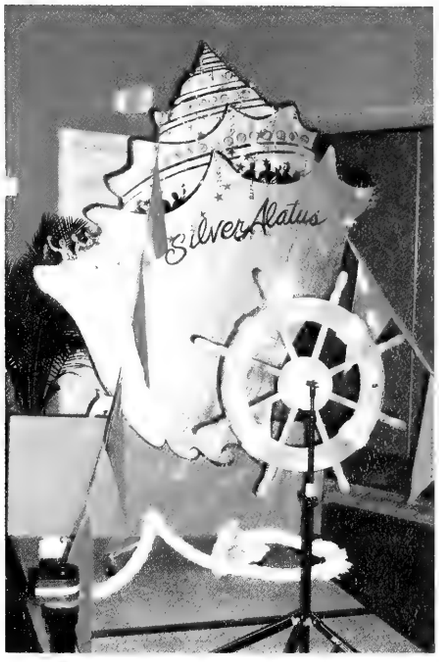
End of a Voyage

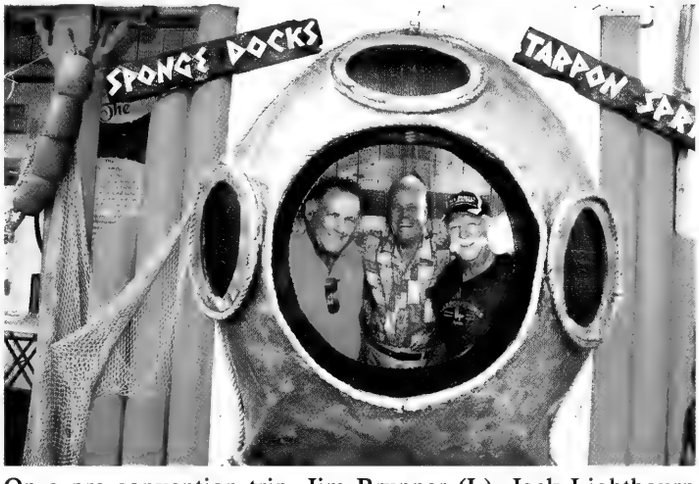
By Bob Pierson

Photographs by B. Dolezal, E. Petrikin, & B. Pierson

The Conchologists of America 2009 convention aboard the imaginary cruise ship *Silver Alatus*, carrying some 230 passengers & crew from 24 States and 15 foreign countries, sailed and safely returned home. Our voyage consisted of visits to such exotic ports-of-call as Peanut Island on Florida's east coast, Cat Island in the Bahamas, Jamaica, and the West Indies. After transiting the Panama Canal and crossing the equator (with a visit by King Neptune), our cruise ship stopped in Ecuador, visited the Pitcairn and Solomon Islands, then wound up in Western Australia, all on a whirlwind five-day cruise! Here are photos of some of the highlights of our voyage, enjoy.



Alatus Cruise Line's *Silver Alatus* is ready to sail off on our five-day adventure.



On a pre-convention trip, Jim Brunner (L), Jack Lightbourn (M), and Merv Cooper (R) fill this giant sponge diver's helmet on the sponge docks at Tarpon Springs.

The convention opens with *Silver Alatus* crew introductions of Co-Captain Carolyn Petrikin (left) and dance instructors Cheryl and John Jacobs.

An abundance of shells and shell-related items made all three Duty Free Silent Auctions popular when programs were not in progress.

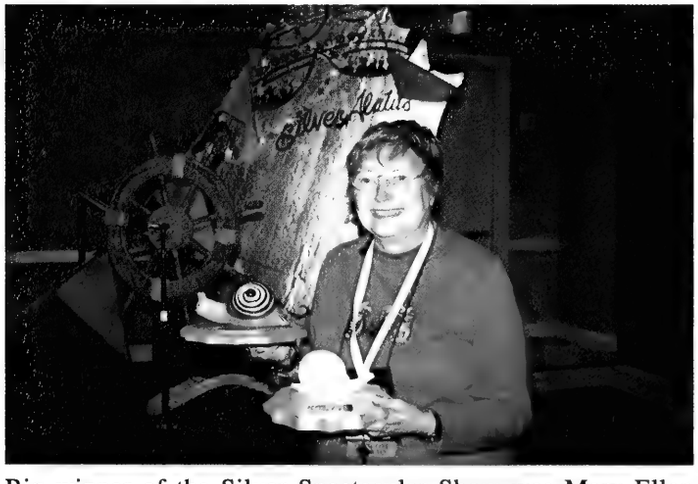
Dr. Ed Petuch of Florida Atlantic University presented a thought-provoking program: "Shell Collecting in the Okeechobean Sea: Fossil Collecting in the Everglades."

Arriving for the Bon Voyage Sail Away Party, Phyllis Gray and her mother, Edith Singleton, receive leis from Suncoast greeters Mary Ellen Akers (left) and Betty Scheetz (right).

Also enjoying the Bon Voyage Sail Away Party are Josy Wiener and Jack Lightbourn.

The Suncoast Silver Spectacular Show had so many entries there was hardly room to accommodate everything.

The 1st and 2nd place awards, created by John & Cheryl Jacobs, were truly unique, each reflecting the specific category for which it was intended.



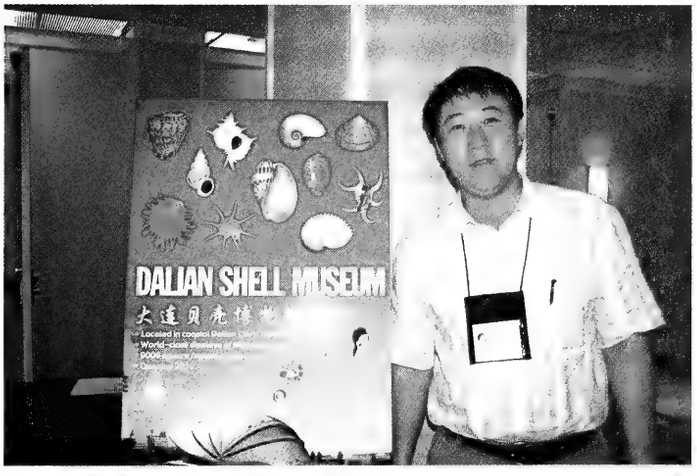
Big winner of the Silver Spectacular Show was Mary Ellen Akers of Suncoast Conchologists. She walked away with four awards!

Auctioneers Jim Brunner and Dave Green (shown), as well as plenty of enthusiastic bidders, were pleased at the innovation of projecting the item going up for bid on the huge projection screen at the front of the verbal auction room.

King Neptune made a brief appearance as our cruise ship crossed the equator.

The highlight of the convention was the Dealers' Bourse ("International Seashell Expo," as it was publicized in local media), with 43 dealers in attendance.

Besides Merv Cooper and his helper Mr. Jerry from Perth, Australia, other dealers came from South Africa, Brazil, Argentina, Italy, Greece, and the Philippines.



A special visitor was "Sean" Xiaoyu Zhang, Director of the new Dalian Shell Museum in Dalian, China.

At the Banquet, left to right: Heather Smith, Lynn Foster, Gary Schmelz, Allison Stanes, & Bernice Schmelz. Standing are Arline & Hans Reimann. Twin sisters Heather Smith and Allison Stanes were first-time visitors from Auckland, New Zealand.

The organizing committee, from left to right: Captain Carolyn Petrikin, Mary Ellen Akers, Roni Mucci, John & Cheryl Jacobs, Sharlene Totten, Betty & Bob Lipe, Joan & Bob Pierson, Katherine Smith and Captain Alice Monroe.

Join in the celebration of the *Conchologists of America 2010 Convention* in Boston, Massachusetts, and help observe the 100th year of the Boston Malacological Club. Convention dates are August 26th through August 31st, with pre-convention tours August 26th & 27th.

Come to Boston in 2010, a city filled with beauty, history, and culture. The host hotel, the Boston Park Plaza, is in the heart of downtown Boston, a short walk from many of the finest attractions and minutes from Logan International Airport.

Take a ride on the famous Swan Boats of the Boston Public Garden. Visit the Boston Museum of Fine Arts or the Harvard Museum of Natural History. Take in a ball game at Fenway Park, home of the Boston Red Sox. Tour Boston's famous restored waterfront area, including Quincy Marketplace and the New England Aquarium. See some of Boston's historical treasures from revolutionary times, such as the Paul Revere house and the U.S.S. Constitution, the oldest commissioned warship in the world. Dine in Boston's superb variety of restaurants, many within walking distance of the hotel. Cape Cod is only a few hours from Boston to the south, and to the north, the picturesque White Mountains of New Hampshire and the scenic seacoast of Maine.

Field trips planned include the Boston Duck Tour; the U.S.S. Constitution; the New England Aquarium; Quincy Marketplace; historic Concord, Massachusetts; the Harvard Museum of Natural History; historic Salem, Massachusetts; and a shelling trip.

Look for the convention registration form and other detailed information in the December issue of American Conchologist, and see you in Boston in 2010!

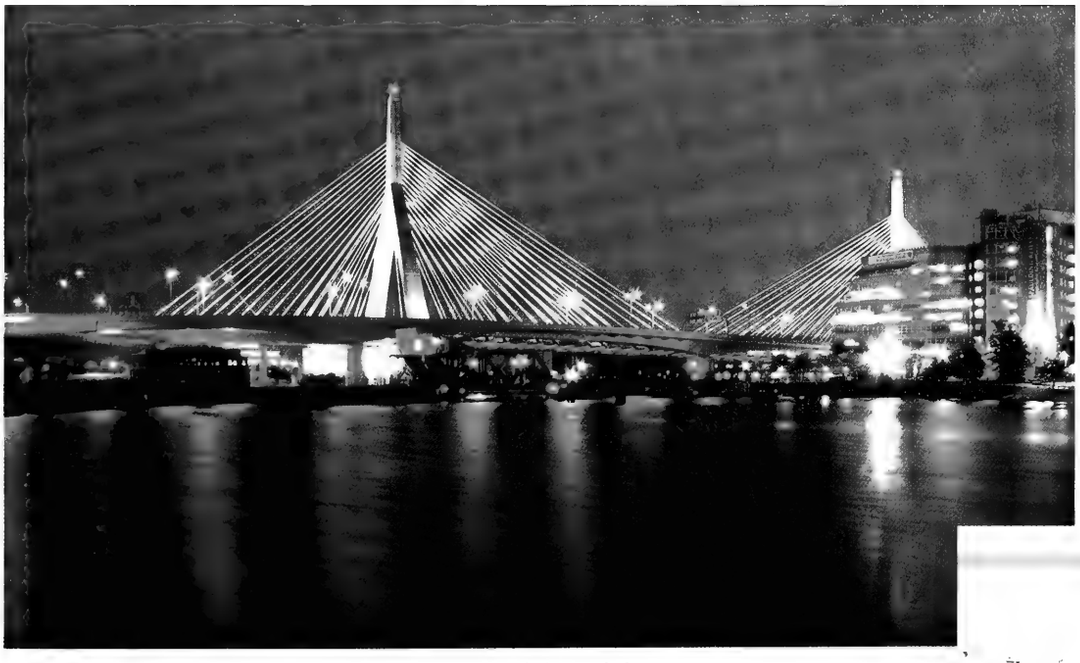
Convention contacts:
Don Robak shellsnail@comcast.net
(617) 889-1841
Warren Graff lowhurdler@gmail.com
(978) 346-8977

COA 2010 convention video available upon request

Send auction donations to:
Don Robak
6 John Street
Chelsea, MA 02150

(above) The Old State House in downtown Boston.
(below) Swan boats offer an interesting mode of transportation.

Boston as seen from the Charles River.



(above) Zakim Bridge and Bunker Hill Memorial at night.
(right) "Old Iron Sides," the USS Constitution.

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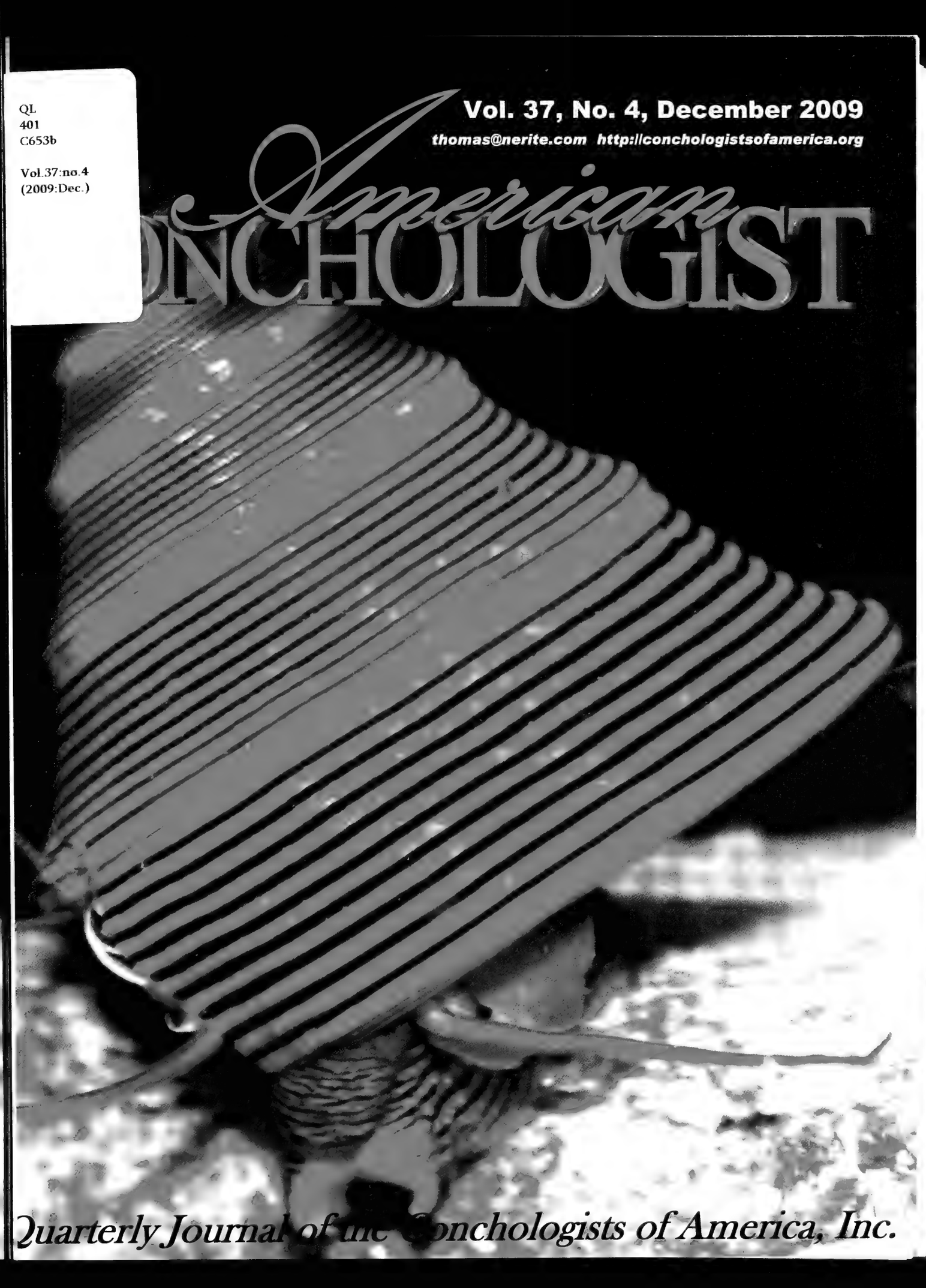
thomas@nerite.com http://conchologistsofamerica.org

American Conchologist



Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS OF AMERICA, INC.

Volume 37, No. 3 December 2009

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver (owned and operated by the University of Georgia) at: listserv@listserv.uga.edu Instructions for joining Conch-L are on the COA web site.

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MEMBERSHIP is for the calendar year, January-December, late memberships are retroactive to January. 2008 DUES: $25; postal surcharge: USA none ($5 additional for USA first class), $5 for Canada and Mexico (total of $30), $15 for all other countries (total of $40). New members apply to Doris Underwood, Membership Director. Please pay in U.S. dollars ($), or with a check on a U.S. bank with Transit Enrouting and Account Numbers printed at the bottom, or with money order. Make checks payable to: CONCHOLOGISTS OF AMERICA. Notify Membership Director with change of address.

BACK ISSUES are available from Doris Underwood, Membership Director. Prices: prior to 1985, $3 each, 1985 to current, $5 each; postage extra.

IN THIS ISSUE

Front cover: ***Calliostoma javanicum*** **(Lamarck, 1822) as captured on film by Charlotte Thorpe off the island of Roatan, Honduras. This colorful and delicately sculpted shell is always popular with collectors, but seldom seen with such intense colors. Read more about Roatan shells on page 22.**

Back cover: ***Trachycardium muricatum*** **(Linnaeus, 1758) from Roatan Island. This bright yellow cockle was photographed by Marc Nathanson and represents yet another example of the quality mollusks found off of Roatan Island.**

Editor's comments:

This issue should have one or two articles of interest for just about any of our readers. Kovis Moti, a not infrequent contributor, shares an interesting story of diving in the Gulf of Aqaba. Located at the northern tip of the Red Sea, this is not an area we read much about, so his tale is most welcome.

Next we have the shell show schedule by Donald Dan. He keeps this constantly updated and published on both Conch-L and in *American Conchologist*. I don't know of any other single listing of worldwide shell shows (thanks Donald). And speaking of shell shows, I have had some problems with gathering and reporting shell show results the last couple of years. I have decided that instead of waiting for all of the results and then publishing a complete overview, I will publish the results as I get them - thus the Sea Shell Searchers show results in this issue. So shell clubs send in your results. The more information about the clubs and shows I get, the more can be published.

Our "In Memoriam" has a farewell to three members, each of whom will be missed. We also have a bit more on Fay Mucha. For years she provided hundreds of images from each annual convention for this magazine and our history binders.

The hunt and discovery of the missing holotype of *Conus lightbourni* makes a good yarn that has been printed elsewhere, but was worthy of repeating. Next is the report of the pearls from *Strombus gigas,* interesting for a couple of reasons. First, the pearls are certainly elegant and worthy of attention - especially with that fire pattern. Second, it is nice to hear yet another story of successful farming of the queen conch.

The Dealer Directory has a couple of new ads, so take a look. This is followed by yet another book review for a book by Richard Petit. His exacting research and seemingly tireless writing efforts have enriched modern conchological literature. Hats off to COA members such as Richard Petit or Harry Lee or anyone else who is willing to share hard-won knowledge. This includes, of course, the many contributors to this and other conchological publications. Thank you!

My story about Edgar Allen Poe was begun because he was born 200 years ago. I had heard a bit about his shell book and the problems of authorship, after reading a bit more I thought I might share more of his story.

Karen VanderVen shares another shell trip with our readers. This time she writes about an exciting trip to Roatan Island. Thanks to Charlotte Thorpe, Marc Nathanson, and Randy Allaman for some great photographs that bring this trip to life.

Zvi Orlan has been on these pages quite often with his collecting trips and other articles. This time he is bidding us farewell and sharing a bit of his love for our avocation.

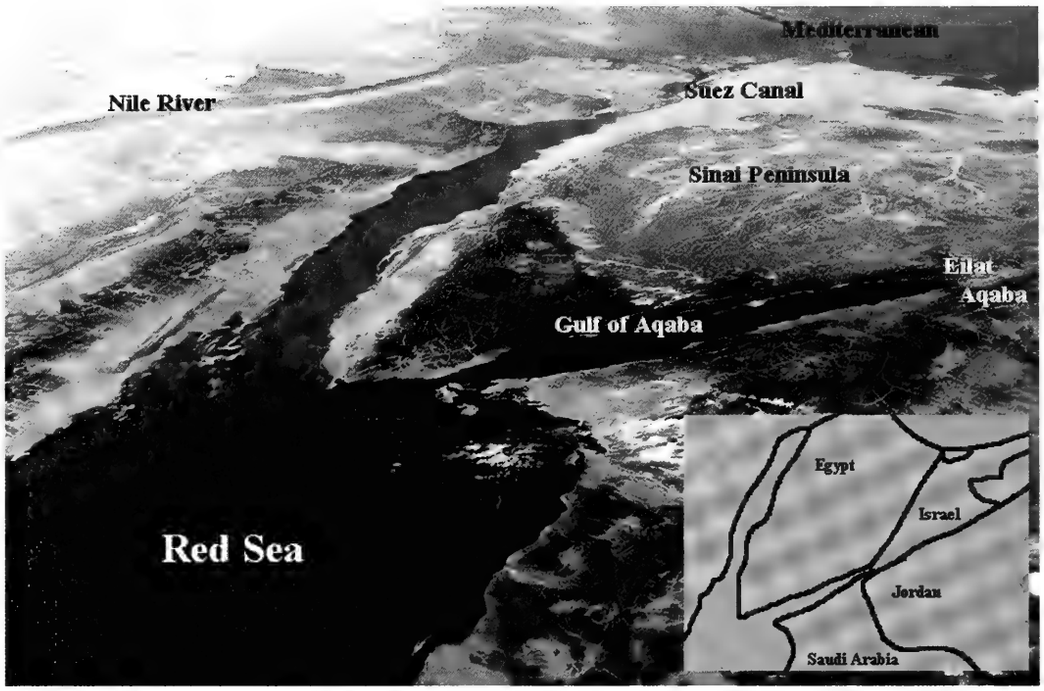
Finally, we have Shell-abration Boston: COA 2010. The COA annual convention is always worth attending. There are always lots of folks who share an interest in shells, programs to learn more about shells, dealers willing to part with prized possessions, and local area sights to see. Well this time we hit the jackpot in this last category. The Boston area saw much of the beginnings of the birth of our nation. Take a look at the photographs accompanying the article and I think you will agree that this is a must attend event. See you there...

Tom Eichhorst

Live shells from the Gulf of Aqaba in the Red Sea

By Kovis Moti

The Gulf of Aqaba contains the northwestern most coral reef of the Indo-Pacific, where the geographic location and structure of the Gulf of Aqaba have resulted in a unique coral habitat. The north part of the Red Sea splits into two fingers. The left extension is the Suez Gulf, while the right extension is the beautiful Gulf of Aqaba (see satellite image). The city of Eilat (the southern-most city of Israel) and its neighboring city Aqaba (one of the southern-most cities of Jordan) are located on the northern shore of the Gulf. This story is about day and night dives in the coastal area off Eilat. Most of the coast in Eilat is taken up with hotels, industrial complexes, and military facilities, so there is really no coastal area that is untouched or wild as can be found in the southern parts of the Gulf (Sinai Desert). Nevertheless, the northern part has a beauty all its own.



NASA satellite view of the northern area of the Red Sea. This image shows the Nile River in the upper left and the two gulfs that extend northward from the Red Sea: the Gulf of Suez and the Gulf of Aqaba. Egypt, Israel, Jordan, and Saudi Arabia have coastlines on the Gulf of Aqaba. The Gulf of Aqaba is 24 kilometers (15 miles) wide at its widest point and 160 kilometers (99 miles) long. It has a maximum depth of over 1800 meters (5,905 feet). In contrast, the Gulf of Suez is 32 kilometers (20 miles) wide at its widest point and 314 kilometers (195 miles) long. Although larger in area than the Gulf of Aqaba, it is less than 100 meters (328 feet) deep.

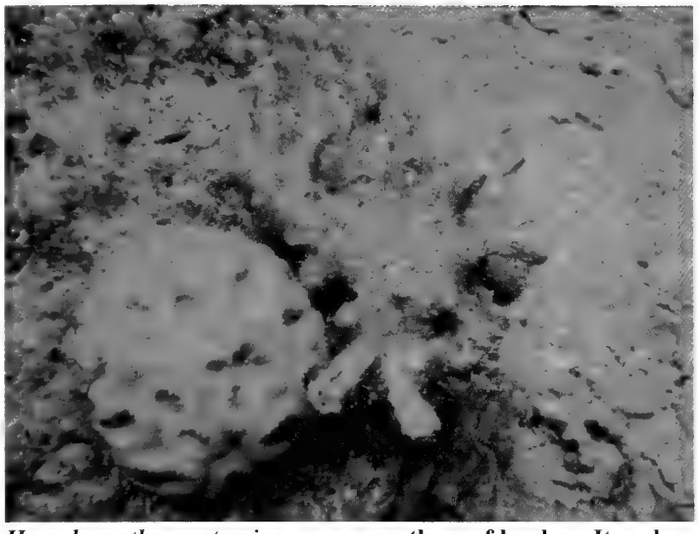
We chose to begin our first dive off the beach at the Princess Hotel. This area seems to be a natural reservoir of the marine life of the Gulf. The dives were planed as follows: a fast descent to 110-120 feet for 30 minutes and then a slow ascent to 10-15 feet for the remainder of the dive. Getting into the water for a dive is not complicated in this area. You simply park the car 15 feet from the water, don your SCUBA gear, grab your camera, and walk into another realm.

Our clumsy progress in full SCUBA gear across the beach lacked the elegance of dropping off of a boat to begin a dive, but the end result was more than satisfactory. As soon as you lower your head below the water, the world changes. It is only a brief swim of 10-20 feet to where the sandy bottom slopes down and the real dive begins. On the sand were *Conus arenatus* Hwass, 1792; *Conus aequipunctatus* Dautzenberg, 1937; and *Conus tessulatus* Born, 1778, but we were here to find the rare shells of this area. Our search was very slow and careful. The corals are clumped in dense formations and are extremely fragile. We had to be very careful to keep from breaking any of the corals. In fact, even a slight touch can cause damage to the animal. The search was on.

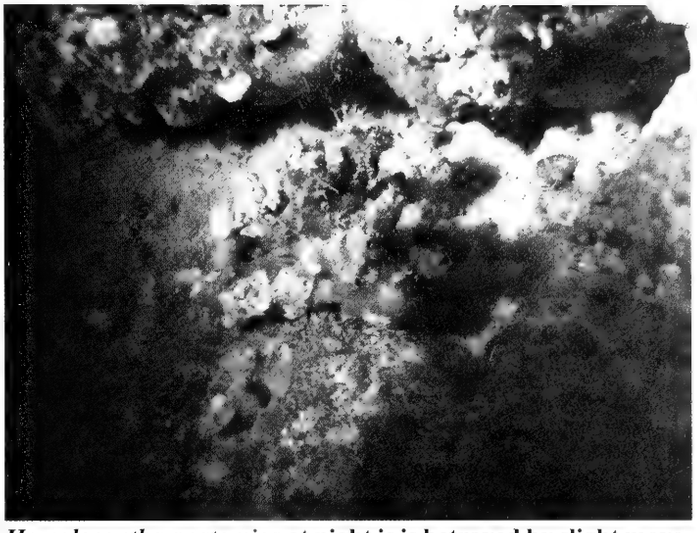
The fact that I am colorblind is often a disadvantage in my daily life as an optometrist, but it is a huge advantage as a diver. Murex shells such as the *Homalocantha anatomica* (Perry, 1811) that are camouflaged to look like the coral upon which they live do not escape my camera. Without the distraction of color, it seems I am able to pick out the shapes of hidden shells. During the day the *Homalocantha anatomica* is found unmoving on rock or coral that looks like an extension of the animal's shell. It is easier to spot at night when it is actively feeding and moving across the substrate.

Another rarity we find on this first dive is *Spondylus pickeringae* Lamprell, 1998. It also makes a wonderful subject for my camera, but it seems time has gone by quickly and our 30 minutes are up. The dive computer's gentle reminder has turned quite strident; it is time to head for shallow water.

The shallows are also interesting and we find *Cypraea nebrites* Melvill, 1888, and *Cypraea turdus* Lamarck, 1810, crawling along the bottom with their mantles fully extended. A slight touch on the mantle of *Cypraea turdus* and it is quickly retracted. The stromb, *Lambis lambis* (Linnaeus, 1758) is also active by day. In this area, *Lambis lambis* and *Tricornis tricornis* (Humphrey, 1786) are uncommon and it is always a treat to see a large stromb in the sand. As we hit the shallow water near the waterline we encounter a few *Conus parvatus sharmiensis* Wils, 1986, in narrow rock crevices waiting for night. In these same crevices we also find *Mitra litterata* Lamarck, 1811, and on the

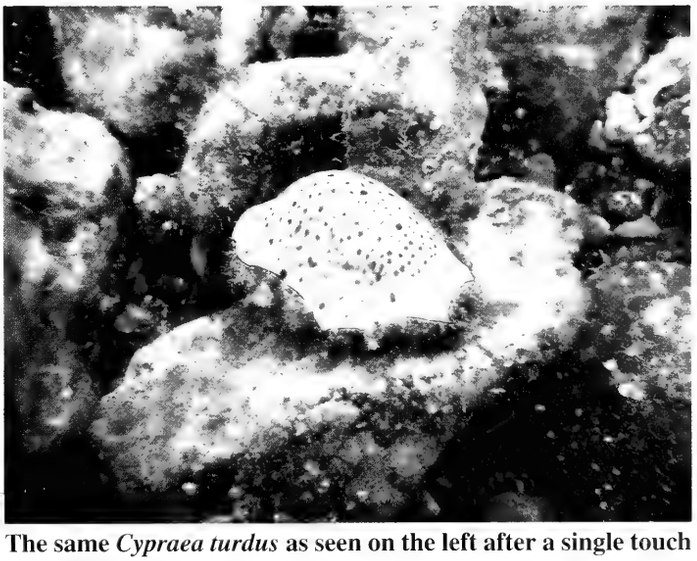


Homalocantha anatomica as seen on the reef by day. Its colors and shape make it easy to mistake for a small coral growth.

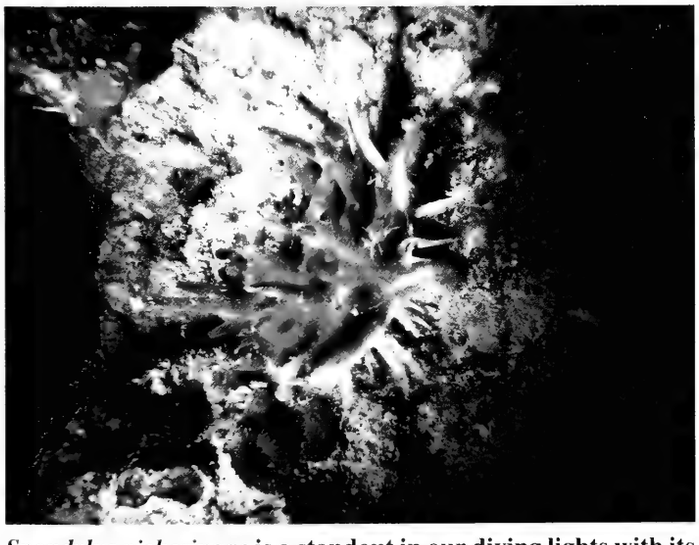


Homalocantha anatomica at night is is betrayed by slight movements of the grazing animal, despite its excellent camouflage.

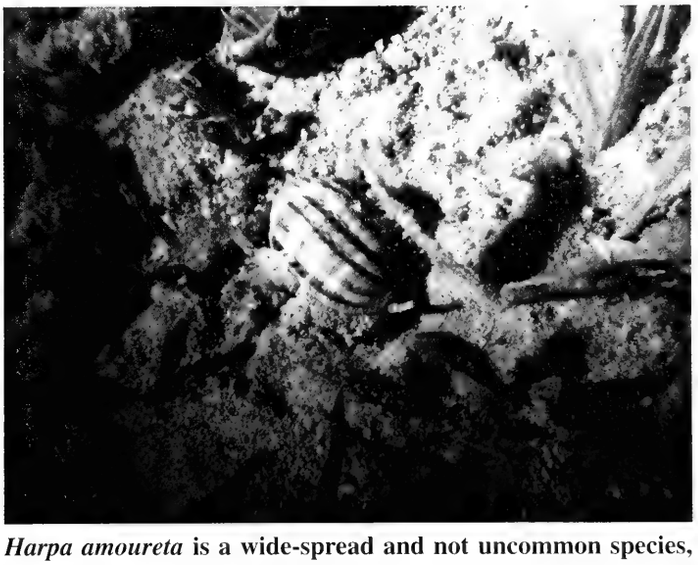
Cypraea turdus is well camouflaged with its mantle fully extended.



The same *Cypraea turdus* as seen on the left after a single touch by a diver's finger.

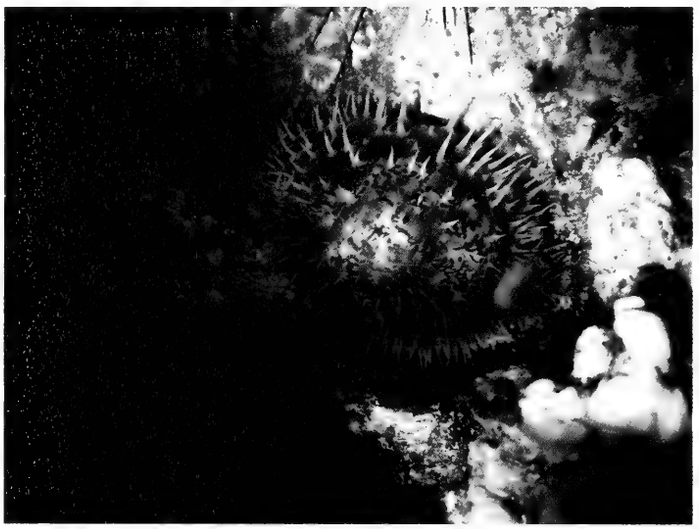


Spondylus pickeringae is a standout in our diving lights with its long red spines. It can be quite difficult to collect without damaging the shell.



Harpa amoureta is a wide-spread and not uncommon species, but it is always a welcome find on a dive due to its under-stated color and pattern as well as its graceful shape.

***Conus textile* is common through most of its extensive range, but it is a rare find in the waters off of Eilat.**



***Cypraea turdus* feeding on the reef at night. Even with its mantle fully spread and covering most of the shell, the color and pattern are still evident.**

***Casmaria ponderosa* (Gmelin, 1791) is also one of the species commonly encountered in the Gulf of Aqaba.**

***Pterynotus elongatus* is almost always covered with algae and coraline growth, but after careful cleaning it is a graceful and showy addition to any collection.**

higher portions of the rocks are *Drupa hadari* Emerson & Cernohorsky, 1973. This last is a common species in this area, but most are in poor condition due to their intertidal habitat.

As we emerge in our dive gear from the cool water, the burning wind on our faces is a shock. The contrast is unbelievable. The water is 23°C (73°F) and on land the air temperature is 43°C (109°F). Amazing.

After the dive it is time to eat and then relax and rest up for the night dive. Night diving has a drama all its own and we have high expectations. The pattern and location for the dive will be the same as our day dive, but there is probably a better chance of encountering rare species.

As we swim along the coral, the first shell to catch my eyes is a *Harpa*. This is not a common sight at 110 feet as they are more typically encountered in shallow water. The theory says one thing, however, and nature says another. A closer look shows this to be a *Harpa amouretta* Röding, 1798. Not far from the rocks I spot a sand trail with *Pterynotus elongatus* (Lightfoot, 1786), a rare murcid for the Eilat area. Not far from the muricid's trail I spot a large *Cypraea caurica nabeqensis* (Heinan & Mienis 1999). Then, once again, the computer reminds me it is time to go. The ascent is slow and on the way we spot many dead bivalves. Just before the water's edge, we find a real surprise. In this very shallow water we spot a beautiful *Conus textile* Linnaeus, 1758. While this may be a common sight in the Philippines, or even in the southern portions of the Gulf of Aqaba, it is rare in the Eilat area. We also come across a small *Cypraea microdon* J.E. Gray, 1828, and a *Cypraea arabica grayana* Schilder, 1930. All in all, a fine ending to our night dive in the Gulf of Aqaba. I plan right then to return in October and try my luck at finding and photographing the elusive *Cypraea pulchra sinaiensis* Heinan & Mienis, 2000. I am already looking forward to this next adventure.

Kovalis Moti
Conus45@gmail

2010 SHELL SHOWS & RELATED EVENTS (Jan. – Aug.)
Subject to change - please verify with individual organizations

Jan. 16-17 2010 **SPACE COAST SEASHELL FESTIVAL**
Melbourne, FL
The Melbourne Auditorium, 625 E. Hibiscus Blvd.
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (321) 452-5736
E-mail: corshell@earthlink.net

Jan.23-24 2010 **BROWARD SHELL SHOW**, Pompano Beach, FL
Pompano Beach Rec Center, NE 18th Av. & NE 6th St.
Nancy Galdo, 4266 Chase Ave.
Miami Beach, FL 33140-3008 (305) 531-0036
E-mail: nancygaldo@gmail.com

Feb. 12-14 2010 **SARASOTA SHELL SHOW**, Sarasota, FL
Sarasota Municipal Auditorium, Tamiami Trail
Sandy Pillow, 11017 Jasmine Circle
Bradenton, FL 34209 (941) 792-2529
E-mail: spillow6@comcast.net Cell: (810) 516-6120

Feb. 19-21 2010 **8th NATIONAL SEA SHELL SHOW**
Fremantle, W. Australia
South Fremantle Football Club, Parry Sreet
Frank Turnbull, P.O. Box 7037
Safety Bay, W.A. 6169 61(8) 9529-2527
E-mail: merv@perthshells.com
Merv Cooper: 61(8) 9528-2722

Feb. 27-28 2010 **ST. PETERSBURG SEA SHELL SHOW,** Seminole, FL
Seminole Rec Center, 9100 113th St. N., Seminole, FL
Bob & Betty Lipe, 348 Corey Avenue
St. Pete Beach, FL 33706 (727) 391-2197
E-mail: blipe@tampabay.rr.com FAX: 360-3668
Exhibit form at: http://www.stpeteshellclub.org

Mar. 4-6 2010 **SANIBEL SHELL SHOW**, Sanibel, FL
Sanibel Community Center, Periwinkle Way
Irene Longley, 2823 8th Ave.
St. James City , FL 33956-2133 (239) 283-7417
E-mail: milsfrills@cs.com

Mar. 6-7 2010 **XXIIéme RECONTRES INTERNATIONALES DU COQUILLAGE,** Paris, France
Bourse de Commerce, 2 rue des Viarmes,
75004 Paris, France
M. & D. Wantiez, 88, Rue du General Leclerc
95210 Saint Gratien, France 33 (1) 34-17-00-39
E-mail: wantiez.mada@wanadoo.fr

Mar. 11-13 2010 **MARCO ISLAND SHELL CLUB SHOW XXVIX**
Marco Is., FL
Marco Presbyterian Church, Elkcam Circle
Linda Shockley, 348 Colonial Avenue
Marco Island, FL 34145 (239) 394-5416
E-mail: marco-sheller@earthlink.net

Apr. 17-18 2010 **INTERNATIONAL SHELL SHOW AND SYMPOSIUM,** The Hague, Netherlands
Muzee Scheveningen, Scheveningen – The Hague
Paul de Kievit, Neptunusstraat 92
2586 GT The Hague, Netherlands
Tel. 31 70-3500830 E-mail: p.dekievit@muzee.nl

April 24 2010 **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** Essex, England
Theydon Bois Community Centre, Essex
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England
E-mail: tom@tmwalker.co.uk 44 (118) 987-4294

May 15-16 2010 **XX BELGIUM INTERNATIONAL SHELL SHOW**
Antwerp, Belgium
New Venue: "Extra Time" Sports Hall, Louisalei 24, Hoboken
Charles Krijnen, Burgemeester Jansenstraat 10
NL-5037 NC Tilburg, Nederland 31 (13) 463 0607
E-mail: bvc.shellshow@planet.net.nl
Web site: www.bvc-gloriamaris.be/beurs_e.htm

May 28-30 2010 **JACKSONVILLE SHELL SHOW,** Jacksonville, FL
Morocco Shrine Temple, 3800 St. Johns Bluff Road
Charlotte Thorpe, 1010 N. 24th St.
Jacksonville Beach, FL 32250
E-mail: challoyd@bellsouth.net (904) 246-0874

Jun. 27-Jul.1 2010 **JOINT AMERICAN MALACOLOGICAL SOCIETY & WESTERN SOCIETY OF MALACOLOGY ANNUAL MEETING**, San Diego, CA
San Diego State University Convention Center
AMS – Dr. Doug Eernisse deernisse@fullerton.edu
WSM - Dr. George Kennedy gkennedy@bfsa-ca.com
Website: http://www.malacological.org/meetings/next.html

Jul. 3- 4 2010 **TOWNSVILLE SHELL SHOW**, Townsville, Queensland, Australia
Orchid Society Hall, Charles Street, Kirwan
Paul Southgate, 43 Gilbert Court, Castle Hill
4810, Queensland, Australia 61 (7) 4721-0450

Jul. 10-11 2010 **(?) KEPPEL BAY SHELL SHOW,** Yeppoon, Queensland, Australia
(Due to Town Hall renovation, venue uncertain)
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia (7) 4928-3509

Aug. 27-31 2010 **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** Boston, MA
The Boston Park Plaza Hotel, 50 Park Plaza & Arlington Street
Don Robak (617) 889-1841 shellsnail@comcast.net
Warren Graff (978) 749-3351 wgraff@vicr.com
Web site: www.conchologistsofamerica.org

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Revised 2 Dec 2009

Sea Shell Searchers of Brazoria County Shell Show (Oct 30-31, 2009) Lake Jackson, Texas

The Sea Shell Searchers Shell Club of Lake Jackson, Texas, held their shell show at the Lake Jackson Civic Center, 30-31 Oct 2009. Bob and Betty Lipe of St. Petersburg, Florida, were the judges. The COA Award was won by Janey Nill and the Dupont Trophy was won by Patty Humbird.

The Sea Shell Searchers meet the first Tuesday of every month, September through May, at 7:30 p.m. in the Brazosport Museum of Natural Science located at the Center for the Arts and Sciences, 400 College Drive, Clute, TX. For information contact: shellclub@earthlink.net

Winner of the COA Award, Janey Nill, is congratulated by judge Bob Lipe.

Winner of the Dupont Trophy, Patty Humbird, is congratulated by judge Bob Lipe.

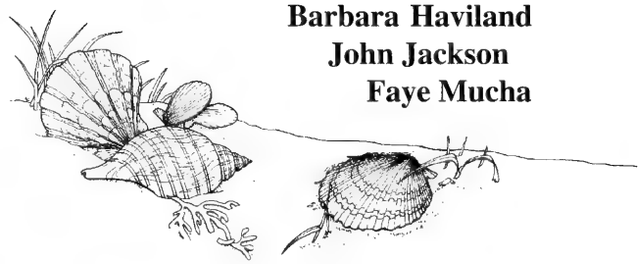
Fay Stowe Mucha, 75, passed away on Sunday, October 11th, 2009. Born in Bradenton, Florida, her family settled in Miami in 1941. She made her career in the medical field as a histotechnologist, retiring from the University of Miami, Jackson Memorial Hospital, six years ago. She is survived by her daughter, Michelle Arseneau Corbett, grandsons Christopher and Shaun Corbett, and brother Ronald Stowe. She will be deeply missed by many, many friends and family.

For decades, she was an avid shell collector and member of the Greater Miami Shell Club, Broward Shell Club, and the Conchologists of America (COA). She collected a number of ribbons for her shell exhibits and through the years held several club titles including: Program Chairman, Historian/ Photographer, Field Trip Chairman, and COA representative. In recent years she also studied the world of butterflies and had her own beautiful butterfly garden.

The shelling world mourns her departure. Her beloved Broward Shell Club will especially miss her enormous spirit and many contributions to the club's success. Readers of this magazine should know that for many years Fay was our official convention photographer.

In Memoriam:

Barbara Haviland
John Jackson
Faye Mucha



Discovery of the *Conus lightbourni* Petuch, 1986 holotype

Elizabeth K. Shea[1] and William J. Fenzan[2]

On Friday 14 March 2008, Bill Fenzan arrived at the Delaware Museum of Natural History (DMNH) with a specimen whose arrival had been eagerly anticipated for many years – the holotype of *Conus lightbourni.* This specimen was collected in 1973, described by Ed Petuch in 1986, and documented as missing from the DMNH collection in 1991 (Bieler & Bradford, 1991). Over the years, there has been much speculation about the whereabouts of the shell. Many concluded that the shell had been sold to a private collector and was hidden away.

Fig. 1. The type locality of the *Conus lightbourni* type specimens, 2.5 km south of Castle Island, Bermuda.

Background

In the early 1970's John R.H. Lightbourn and Arthur T. Guest developed a productive way to collect gastropods shells by trapping the hermit crabs that inhabited them. Baited lobster traps were dropped into the deep waters off Bermuda and left for several days. When the traps were retrieved, the hermit crabs had delivered new and interesting slope-inhabiting mollusks to Lightbourn and Guest's eager hands (Figure 1, Lightbourn 1991, Jensen & Pearce 2009).

The Lightbourn/Guest specimens were well known in the molluscan community and many new species were described based on their findings (see Lightbourn 1991, Jensen & Pearce 2009). In the mid-1970s, Jack Lightbourn sent many specimens to his friends and colleagues R. Tucker Abbott and Russ Jensen at DMNH for their consideration and study (Jack Lightbourn pers. comm. 28 April 2008). Ed Petuch was a graduate student at the University of Miami at the time and regularly visited the DMNH collection.

In 1977, Tucker Abbott abruptly left DMNH, leaving Russ Jensen in charge of the collection. According to Ed Petuch, Russ encouraged his interest in cone snails, and suggested he study the Lightbourn/Guest specimens. He hand carried the specimens to school, wrote his manuscript, and hand carried the specimens back to DMNH the following year (Ed Petuch, pers. comm. 1 April 2008). After substantial delays, the original description of *C. lightbourni* was published in the Proceedings of the Biological Society of Washington in 1986.

The Problem

In 1988, R. M. Filmer visited DMNH and learned that the holotype of *C. lightbourni* could not be located. Bieler and Bradford (1991) subsequently documented two problems with the *C. lightbourni* type specimens. First, the holotype was not present in the DMNH collection and second, the range of measurements given for the paratypes in the original description was inconsistent with the specimens in the collection (Bieler & Bradford, 1991).

During manuscript preparation, Bieler and Bradford re-examined Jack Lightbourn's personal collection of *Conus lightbourni* in an attempt to resolve these issues. Four specimens were examined, three of which were identified by size as being part of the specimen series listed in the original description as remaining in Jack's collection. The fourth specimen (50.5mm) was much larger than the published size range in the description (22.4 – 44mm) and was likely added to Jack's collection after the original description was published. None of the specimens matched the pattern of the published holotype material.

Bieler & Bradford (1991) concluded that the holotype had never been received by DMNH, and that the DMNH paratype series contained two of the three originally described & identified paratypes. Over the years, DMNH curators have tried to piece together the location of the missing holotype without success. Letters were written to Ed Petuch, Conch-L was queried, researchers & shell collectors were asked to speculate, but nothing was ever resolved.

The Retrieval

In mid-2007, Jack Lightbourn contacted Don Pisor, a shell dealer in San Diego, about selling his prized shell collection. Don agreed to buy the collection, which included a single specimen of

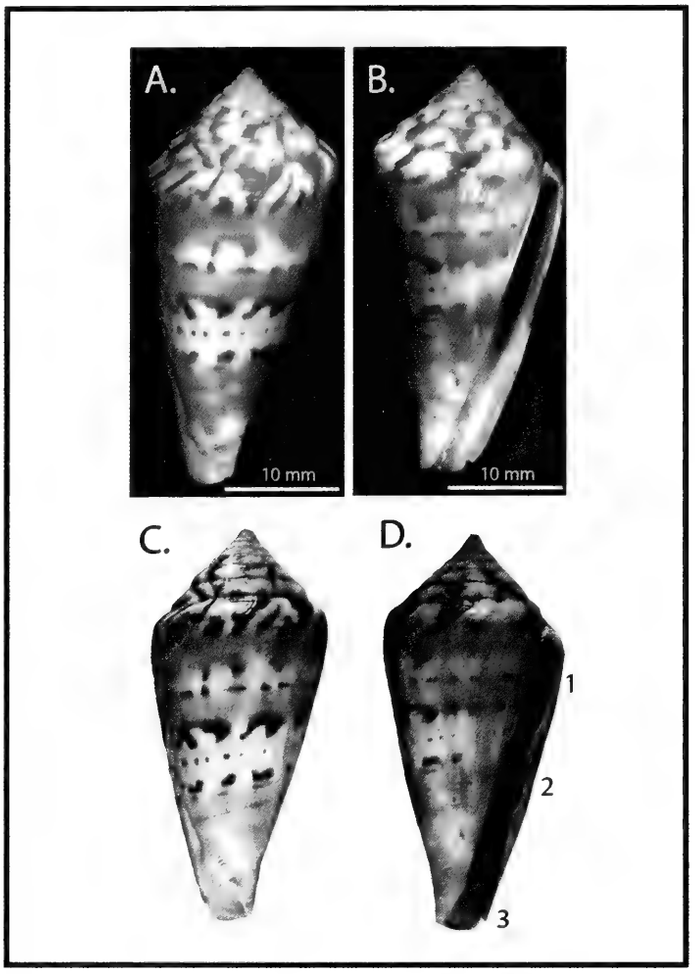


Fig. 2. The holotype of *Conus lightbourni* was found, identified, and returned by the combined serendipity, effort, and good-will of Jack Lightbourn, Don Pisor, Harry Lee, and Bill Fenzan (co-author). Dorsal (A) and ventral (B) view of the returned specimens, and dorsal (C) and ventral (D) view of the published holotype, taken by M.G. Harasweych. Photograph © 2007 Biological Society of Washington, *Proceedings of the Biological Society of Washington*, reprinted by permission of Allen Publishing Services. Plate reprinted with permission of the *American Malacological Bulletin*, Ken Brown, Editor.

C. lightbourni. Other specimens of *C. lightbourni* were retained to maintain an exhibit of local shells for visitors to Jack's house.

Upon his return to San Diego, Don found a second specimen of *C. lightbourni* in a container of "Bermuda miscellany." After discussing the serendipitous find with Jack, Don decided to keep one specimen for himself, and sell the other. He contacted Bill Fenzan, a known *Conus* collector, who happily agreed to purchase the specimen. In short order, Bill received the *C. lightbourni* and an invoice.

Knowing that the holotype of *C. lightbourni* was missing, Bill checked his specimen against the original description. Although the measurements were not exact, the patterns and imperfections of the specimen in hand (Fig. 2 A-B) matched the original description perfectly (Fig.2 C-D). An independent review of the photographs by Dr. Harry Lee confirmed this identification.

With the missing holotype of *C. lightbourni* in hand, Bill called Liz Shea at DMNH and recounted the whole story. On 14 March 2008, the holotype arrived at DMNH, carefully protected in Bill's jacket pocket. The story of its discovery was the highlight of Mid-Atlantic Malacologists Meeting the following day (Fig. 3).

So What Happened?

In April 2008, Liz emailed Ed Petuch to let him know the shell had been found, but not where or how. In a series of email exchanges, Ed recalled that he had hand carried the shell to DMNH. He went on to suggest that the shell may have travelled out of the Museum for further study, a common practice in the 1970s and 1980s.

Unfortunately, there is no paperwork that can be tied to this specimen to support or refute this account. There are no donation papers, thank you letters, or loan documents. Only a few meager resources establish collections activities in the late 1970s and early 1980s. We can document that during a flurry of activity in December 1979, two catalog numbers were skipped in the original, hardbound, DMNH ledger (Fig. 4). In January and February 1980, these numbers were mistakenly filled in with new data, suggesting the specimens had not been received by February 1980. At an undated time, DMNH volunteer Al Chadwick scratched out the incorrect data and added the reminder that DMNH 134938 was assigned to the *C. lightbourni* holotype but it had never been received.

There are multiple entries in the guest book documenting visits by Jack Lightbourn and Ed Petuch in 1978-79, but none that specifically reference *C. lightbourni*. Multiple trips between DMNH and Bermuda can be documented based on letters and receipts in the DMNH archives, and the well-worn path between the two locations was confirmed by Jack Lightbourn (pers. comm. 28 April 2008). There are no firm records of Ed Petuch visiting the museum from 1980 - 1988. Regrettably, we cannot document the actual history of the *C. lightbourni* holotype. How the specimen got mixed in with the collection of "Bermuda miscellany" remains a mystery.

Where Is It Now?

The *C. lighbourni* holotype (DMNH 134938) is now happily housed in the type collection at DMNH and ready for further study. A brief announcement of the return was published by *The Cone Collector* (Fenzan 2008), and in the *American Malacological Bulletin* (Shea & Fenzan 2008). A photograph of the specimen has been provided to Dr. Alan Kohn for his Conus Biodiversity Website (http://biology.burke.washington.edu/conus/index.php).

Please come to visit, measure, photograph, and otherwise study this beautiful shell. Just don't ask to borrow it!

Acknowledgements

We thank Mr. Jack Lightbourn, Dr. Ed Petuch and Dr. Jerry Harasewych, for their willingness to discuss their memories of these events. Thanks to previous DMNH curators Drs. Rüdiger Bieler, Paula Mikkelsen and Tim Pearce for their past attempts to locate the specimens and the notes they kept. Thanks to Mr. R.M. Filmer for recounting notes of his visit to DMNH in 1988. We appreciate

Fig. 3. Group photo from the 2008 Mid-Atlantic Malacologists Meeting at the Delaware Museum of Natural History. Bill Fenzen is grinning in the back row, blue shirt, sixth from the right.

Mr. Don Pisor's understanding of the importance of the holotype to DMNH, and his efforts to facilitate its return. We thank Dr. Harry Lee for his independent review confirming initial suspicions of the identity of the holotype. Thanks to all who commented on this paper during its preparation, especially Dr. Alan Kohn, Dr. Paula Mikkelsen, and Mr. John Tucker.

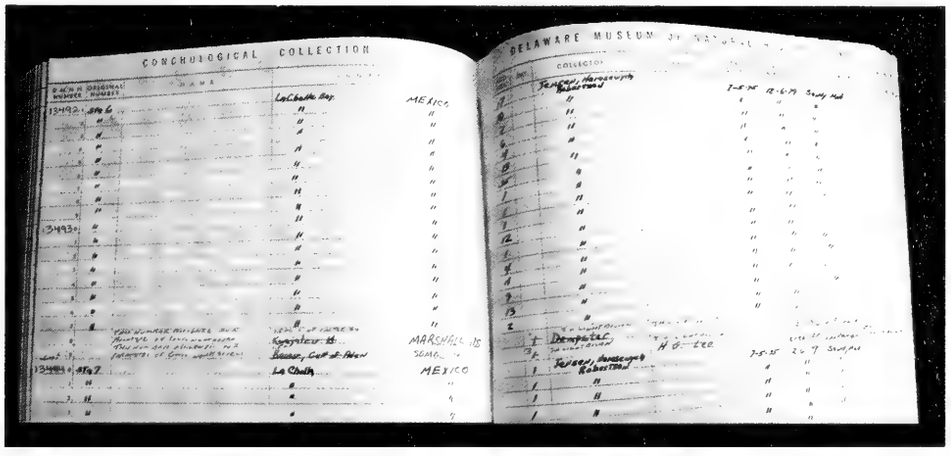


Fig. 4. Photograph of the original DMNH ledger with mistakes & corrections. The remarks section at the far right reads: "Specimen never returned to DMNH."

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Scientists at FAU's Harbor Branch Oceanographic Institute are the First to 'Unlock' the Mystery of Creating High-quality Cultured Pearls From the Queen Conch

By Gisele Galoustian

In their natural form, conch pearls are among the rarest pearls in the world—it takes about 10,000 queen conch to find one conch pearl and only 1 in 100 of those is gem quality.

BOCA RATON, FL (November 4, 2009) – For more than 25 years, all attempts at culturing pearls from the queen conch (*Strombus gigas* Linnaeus, 1758) have been unsuccessful; until now. For the first time, scientists from Florida Atlantic University's Harbor Branch Oceanographic Institute (HBOI) have developed novel and proprietary seeding techniques to produce beaded (nucleated) and non-beaded cultured pearls from the queen conch. With less than two years of research and experimentation, Drs. Héctor Acosta-Salmón and Megan Davis, co-inventors, have produced more than 200 cultured pearls using techniques they developed. Prior to this breakthrough, no high-quality queen conch pearl had been cultured. This discovery opens up a unique opportunity to introduce a new gem to the industry. This significant accomplishment is comparable to that of the Japanese in the 1920s when they commercially applied the original pearl culture techniques developed for pearl oysters.

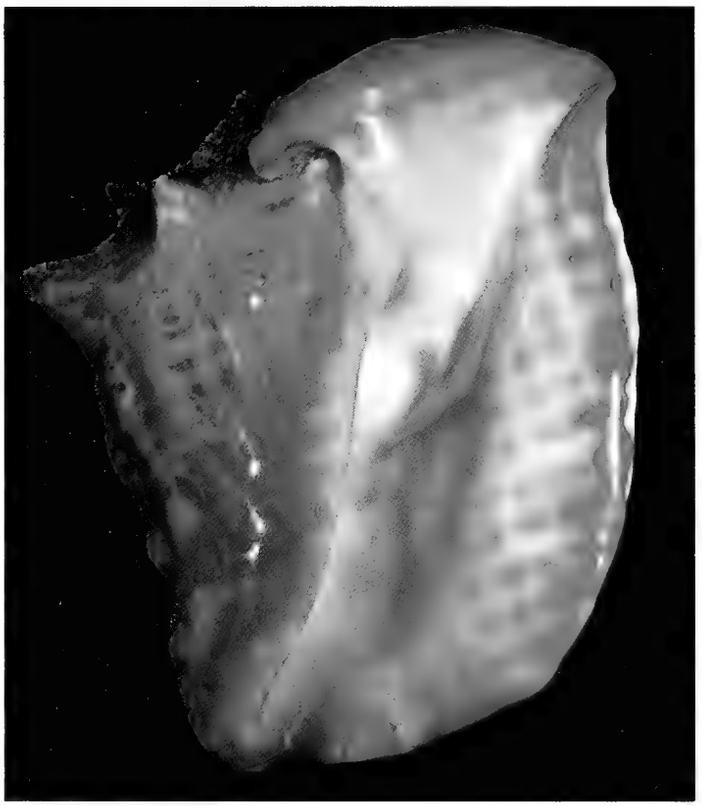
HBOI has been working with the Gemological Institute of America (GIA) to conduct extensive laboratory testing of the queen conch cultured pearls. In its independent analysis, GIA used techniques that included conventional gemological examination, chemical composition, spectroscopy, spectrometry and microscopy. HBOI and GIA plan to jointly publish the results of these trials in an upcoming issue of GIA's scientific journal, Gems & Gemology.

"This is a significant development for the pearl industry and we were very excited to have the opportunity to closely examine these unique conch cultured pearls in our laboratory," said Tom Moses, senior vice president of the GIA Laboratory and Research. "Several of the pearls we examined are truly top-quality gems. With the equipment and expertise available at the GIA Laboratory, identification criteria are being compiled to separate queen conch cultured pearls from their natural counterparts."

Previous efforts to culture queen conch pearls were unsuccessful, probably because of the animal's sensitivity to traditional pearl seeding techniques and its complex shell. The spiral shape of the shell makes it virtually impossible to reach the gonad, one of the pearl-forming portions in pearl oysters, without endangering the animal's life.

"Perhaps the most significant outcome from our research is that the technique we have developed does not require sacrificing the conch in the process," said Davis. "The 100 percent survival rate of queen conch after seeding and the fact that it will produce another pearl after the first pearl is harvested will make this culturing process more efficient and environmentally sustainable for commercial application."

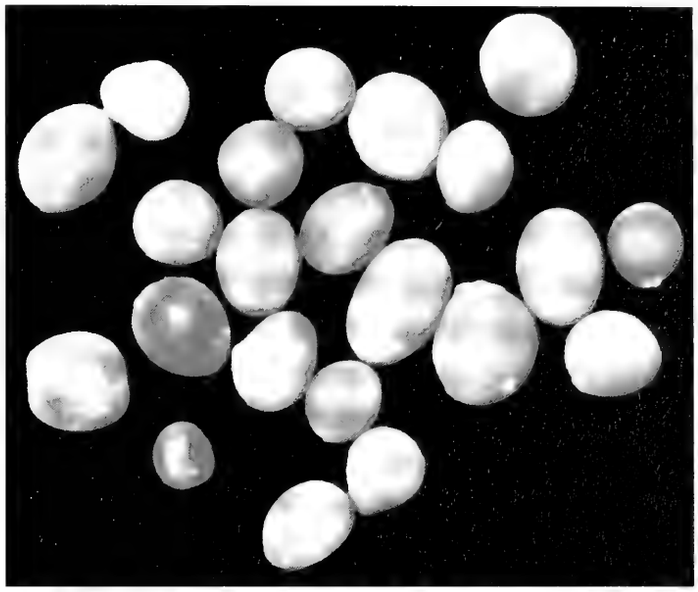
Survival of the animal is critical because commercial fishing and habitat destruction have depleted the once-abundant wild populations of queen conch. They are now considered a commercially threatened species in Florida and throughout much of the Caribbean.

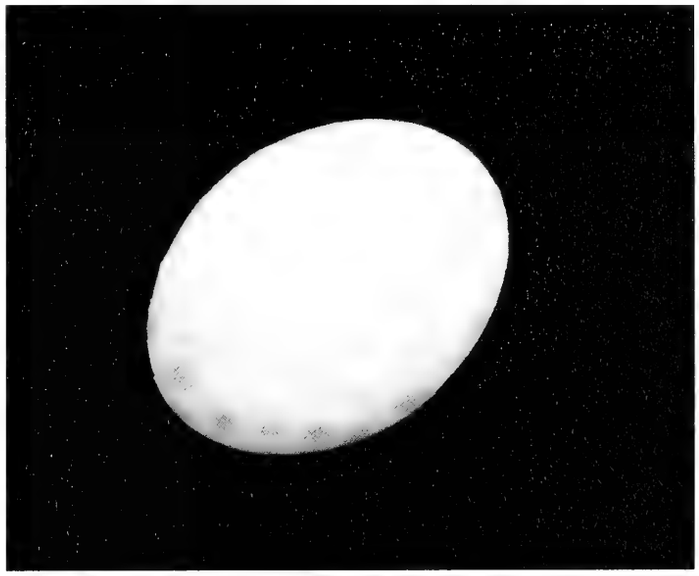


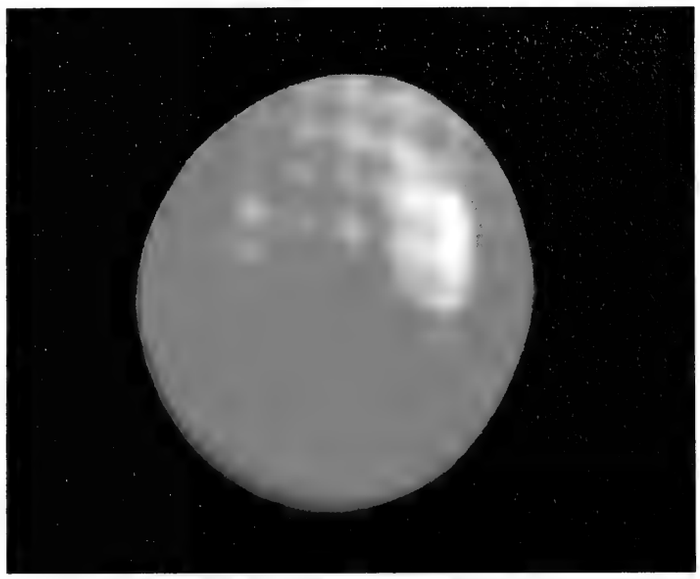
The queen conch is the largest molluscan gastropod of the six conch species found in the shallow seagrass beds of Florida, the Bahamas, Bermuda, the Caribbean Islands, and the northern coasts of Central and South America.

There are basically two types of cultured pearls: nucleated (beaded) and non-nucleated (non-beaded). Nucleated cultured pearls are produced by inserting a piece of mantle tissue from a donor mollusk and a nucleus, usually a spherical piece of shell, into the body of a recipient mollusk. Non-nucleated pearls are produced by grafting only a piece or pieces of mantle tissue, and no bead is inserted.

"We used two different seeding techniques to induce pearl formation in the queen conch," said Acosta-Salmón. "One was a modification of the conventional technique used to produce cultured pearls in freshwater mussels and the other was a modification of the conventional technique used in marine pearl oysters."







Conch pearls are formed by concentric layers of fibrous crystals, and this layering often produces the desired flame structure characteristic of conch pearls (above). The pearls have a porcelain finish and luster like the interior of the conch shell and come in a wide variety and combination of colors (top right), including: white (middle right), red (bottom right), pink, orange, yellow and brown. Queen conch pearls are measured in carats like traditional gemstones.

Conch pearls are formed of concentric layers of fibrous crystals and this layering often produces the desired flame structure, which is characteristic of conch pearls. The pearls have a porcelain finish and luster like the interior of the conch shell and come in a wide variety and combination of colors including white, red, pink, orange, yellow, and brown. Queen conch pearls are measured in carats like traditional gemstones.

The size of the cultured pearls produced by Acosta-Salmón and Davis is controlled by the size of the bead and the culture time. The researchers have experimented with culture times from six months to two years; longer culture times may produce larger pearls. The queen conch is farmed in aquaculture tanks and the queen conch cultured pearls in the initial harvest were grown in an aquaculture facility at HBOI. Queen conchs achieve full size at about three years and have a life span of up to 40 years.

The queen conch is the largest molluscan gastropod of the six conch species found in the shallow seagrass beds of Florida, the Bahamas, Bermuda, the Caribbean Islands, and the northern coasts of Central and South America.

To learn more about these queen conch cultured pearls, go to the G&G eBrief electronic newsletter at www.gia.edu/gandg. For additional information contact Jan Petri at 772-465-2400, ext. 241 or petri@hboi.fau.edu. To view a brief video go to http://pubweb.fau.edu:16080/Research/Conch_Pearl_Press.wmv.

Héctor Acosta-Salmón and Megan Davis examine a tank with juvenile queen conchs at the Harbor Branch Oceanographic Institue at Florida Atlantic University.

About the Inventors:

Héctor Acosta-Salmón, Ph.D. – Dr. Acosta-Salmón has worked in the fields of pearl culture and pearl quality for more than 12 years. He has conducted research with all of the commercial species of pearl oysters, including the akoya, the black-lip, the silver-lip, and the 'mabe' pearl oysters distributed in the Western Pacific, and also with the rainbow-lip and the Panamanian pearl oysters from the Eastern Pacific. He focused on pearl oyster broodstock management and pearl quality during his doctoral studies at James Cook University in Australia. In 2006 he moved to Florida where he served as a post-doctoral investigator at HBOI bringing with him the pearl oyster culture technology, which he utilized during his post-doctoral studies and research. His aim during his tenure with HBOI was to develop techniques to produce queen conch cultured pearls. Dr. Acosta-Salmón also served as an assistant research professor at HBOI until 2009 and is now associate scientist at Centro de Investigaciones Biológicas del Noroeste in La Paz, B.C.S., Mexico.

Megan Davis, Ph.D. – Dr. Davis has worked in aquaculture and marine science for 30 years. As co-founder of a commercial queen conch farm in the Turks and Caicos Islands, she developed commercial culture of conch from eggs to juveniles. She joined HBOI in 1996, and in 2000 she led an effort that succeeded in inducing egg laying in tank-reared conch, effectively closing the entire life cycle of the queen conch for use in aquaculture. She is the director for aquaculture and stock enhancement at HBOI. Her aquaculture skills with queen conch provided the necessary technology for the successful culture of queen conch pearls. Her other interests are to develop aquaculture species for food, stock enhancement, and to ease fishing pressure on wild stocks. She actively works on projects with goals to produce aquaculture species and systems that are cost effective, energy efficient, and environmentally sustainable. She has been involved in several aquaculture retraining and education outreach programs to assist individuals in advancing the aquaculture industry. Her primary research areas are aquaculture of queen conch, spiny lobsters, and marine fish.

About Harbor Branch Oceanographic Institute:

Harbor Branch Oceanographic Institute at Florida Atlantic University is a research institute dedicated to exploration, innovation, conservation, and education related to the oceans. Harbor Branch was founded in 1971 as a private non-profit organization. In December 2007, Harbor Branch joined Florida Atlantic University. The institute specializes in ocean engineering, at-sea operations, drug discovery and biotechnology from the oceans, coastal ecology and conservation, marine mammal research and conservation, aquaculture, and marine education. For more information, visit www.hboi.fau.edu.

About Florida Atlantic University:

Florida Atlantic University opened its doors in 1964 as the fifth public university in Florida. Today, the university serves more than 28,000 undergraduate and graduate students on seven campuses. Building on its rich tradition as a teaching university, with a world-class faculty, FAU hosts ten colleges: College of Architecture, Urban & Public Affairs, Dorothy F. Schmidt College of Arts & Letters, the Charles E. Schmidt College of Biomedical Science, the College of Business, the College of Education, the College of Engineering & Computer Science, the Harriet L. Wilkes Honors College, the Graduate College, the Christine E. Lynn College of Nursing and the Charles E. Schmidt College of Science.

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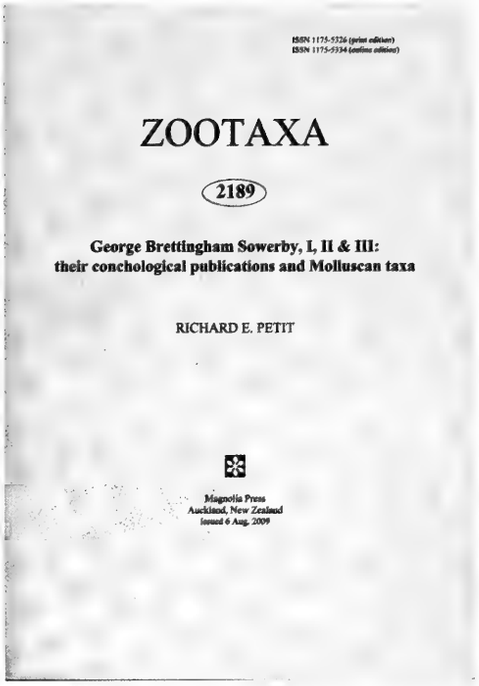
Book Review: George Brettingham Sowerby, I, II, III: their conchological publications and Molluscan taxa

by Richard E. Petit, 2009

Magnolia Press, Auckland, New Zealand, ISBN 978-1-86977-403-5 (print ed.)

ISBN 978-1-86977-404-2 (online edition), pp. 218



The 19th century was an incredible era of natural history science awakening. Europeans had explored the known world and it now lay open to the discovery of wondrous new plants and animals. This is the age of the Curiosity Cabinet, where wealthy collectors vied with each other to house the most complete and sometimes the oddest collection of natural wonders possible. New species were brought back from almost every voyage and they were being named at an unprecedented rate. The three generations of George Brettingham Sowerby were in the middle of this and were instrumental in codifying and presenting to the public some 4,250+ Molluscan species names.

The problem for the modern taxonomist or researcher or even amateur shell collector is that these Molluscan names are found in hundreds of publications and there is often confusion about the proper date or even the correct author (usually at issue is whether it was G.B. Sowerby I, II, or III; but sometimes there are other authors thrown into this mix, including a J. de C. Sowerby). We have all become quite used to including author and date with each scientific shell name. Why? Because with the name and date you can retrieve the original description and you hope resolve issues of identity and type locality. This is made more difficult than it should be when the data slip lists only "G.B. Sowerby," or more commonly just "Sowerby," without designating I, II, or III. Still, if the name includes the year, it should not be too difficult to tie the Sowerby name to a publication in that year – except that incorrect dates for G.B. Sowerby publications are far from uncommon in the literature. Into this mess stepped longtime COA member and author, Richard E. Petit.

In 2007 Richard Petit wrote a definitive biography of Lovell Augustus Reeve, well-known contemporary and sometimes collaborator of the Sowerbys. Petit provides a brief biography of Reeve with corrected publication dates for Reeve's works and an examination and complete collation of each published work. Petit does much the same in the present work, with the addition of a complete and corrected listing of genera and species named by the Sowerbys. The biographical details are kept purposely short, but are interesting none-the-less. Further clues to the life of each of these men are often provided in the description of specific publications. You learn who was the artist, who the shell dealer, and something about their financial and personal ups and downs.

While the biographies are interesting, the real value of this book is found in the description of hundreds of works by these authors. Dates are corrected, or sometimes assigned when there had been none previously listed, and each work is thoroughly and critically examined. This is no small task as the Sowerbys published on mollusks for some 125 years. They sometimes neglected to date their material and did not distinguish between the three generations. The I, II, and III often used today (sometimes applied as i, ii, and iii to indicate it has been added later) was not in use in their time.

Next Petit provides two lists of Sowerby taxa, both genera and species. The alphabetical list of genera indicates that this was not a strength of the Sowerbys. There are far more incorrect, unavailable, or invalid names then there are correct names. Each valid genus name is presented with the type species and any relevant comments. Invalid or incorrect genera are listed with complete citations listing why the name is not correct and again giving any relevant comments. There are only a few pages of genera listings. This changes with the next section that lists 40 pages of species names described by one of the Sowerby's. Again, the valid names are distinguished from the invalid, incorrect, or unavailable names. The vast majority of names in this listing are valid and each is listed with the proper citation (author and date), publication, and locality (if known). Finally there is a rather substantial bibliography for the Sowerbys.

Reading through this most recent Richard Petit work leaves one with a sense of awe. Not at the three G.B. Sowerbys, although they were truly amazing enough and certainly important in the world of conchology. The awe comes into play for first, the depth of coverage Petit provides for what must have been an extremely frustrating and difficult job of research, and second, for his logically organized presentation that actually makes sense of what must have seemed at times to be a morass of conflicting and confusing data.

If you are conducting or plan to conduct any Molluscan research, this volume is a must have. It can be purchased in hard copy from the publisher or as a PDF file from http://www.mapress.com/zootaxa/index.html.

Thomas E. Eichhorst
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Edgar Allen Poe: Conchologist

by Tom Eichhorst

Introduction

Edgar Allen Poe (January 19, 1809 – October 7, 1849) is certainly well known as a writer and poet. He was one of the earliest American writers of the short story and is known to all school children for his mysteries and tales of the macabre. His poem "The Raven" is found in most textbooks on American Literature, as are many of his short stories, several of which provided grist for the movie mills of Hollywood. His tale "The Murders in the Rue Morgue" was released in 1914 as a silent movie, then in 1932 with Bela Lugosi, again in 1971 with Jason Robards, in 1973 as a made for TV movie in France, and finally in 1986 with George C. Scott, Rebecca De Mornay, and Val Kilmer. His "The Pit and the Pendulum" was most recently filmed in 2009 (there are eight previous versions). He is considered the originator of the detective fiction genre ("The Murders in the Rue Morgue") and also published several novels, numerous essays, and a play. He became well known after publication of "The Raven" in 1845, but never had any real economic success. He died at the age of 40 in 1849. His life was a series of tangled tragedies and misadventures. It is one of these misadventures that earned Poe a place in the annals of conchology.

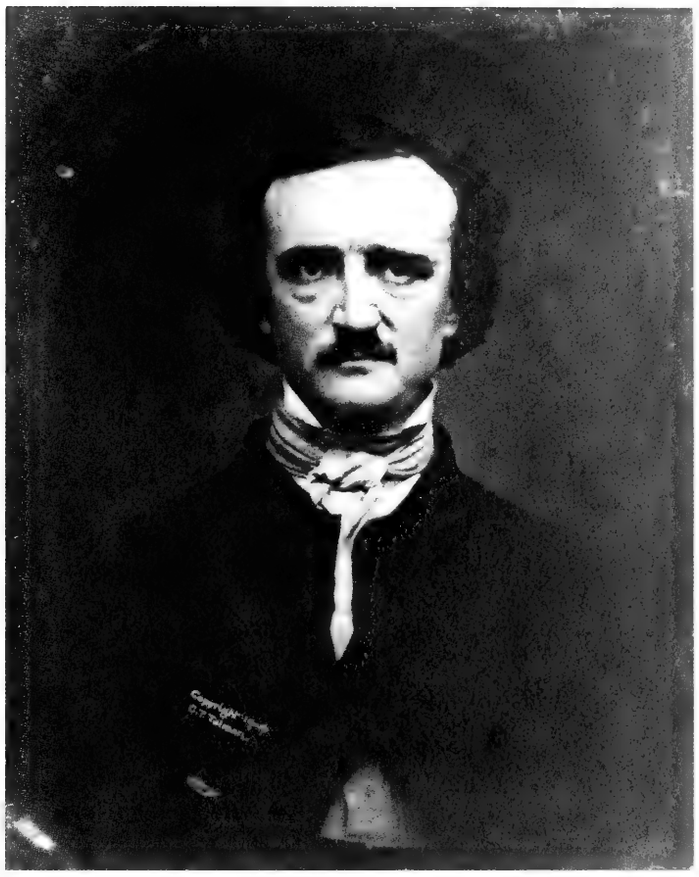
Most readers of this magazine will know that Poe "authored" a book on conchology. Like almost every facet of his life, this tale is not a simple one; so before getting to Poe, the conchological writer, let's review some facts about his life.

The Life and Career of Edgar Allen Poe

Born Edgar Poe in Boston, Massachusetts, he was orphaned at the age of two and fostered (but never adopted) by John and Frances Allan of Richmond, Virginia. The Allens moved to England and Poe received his early education at various schools and boarding houses in Scotland and England. They returned to the U.S. in 1820 and in 1826 Poe entered the newly established University of Virginia. While in Richmond, he courted Sarah Elmira Royster who was 15 at the time. Her father ended the affair. Poe left the university after one semester due to money and drinking problems (a continuing thread throughout his life) and enlisted in the U.S. Army in 1827.

Poe was actually fairly successful in the army and published his first book, "Tamerlane and Other Poems," while serving at Fort Independence at Boston Harbor. After two years, and with the help of his foster father, he procured a replacement for the remainder of his five-year commitment and entered West Point in 1830 as a cadet. Popular with his fellow cadets but not with his commanding officers, Poe was eventually court marshaled and dismissed from West Point in 1831. His third volume of poems (titled simply "Poems") was released at this time, financed largely by donations from fellow cadets.

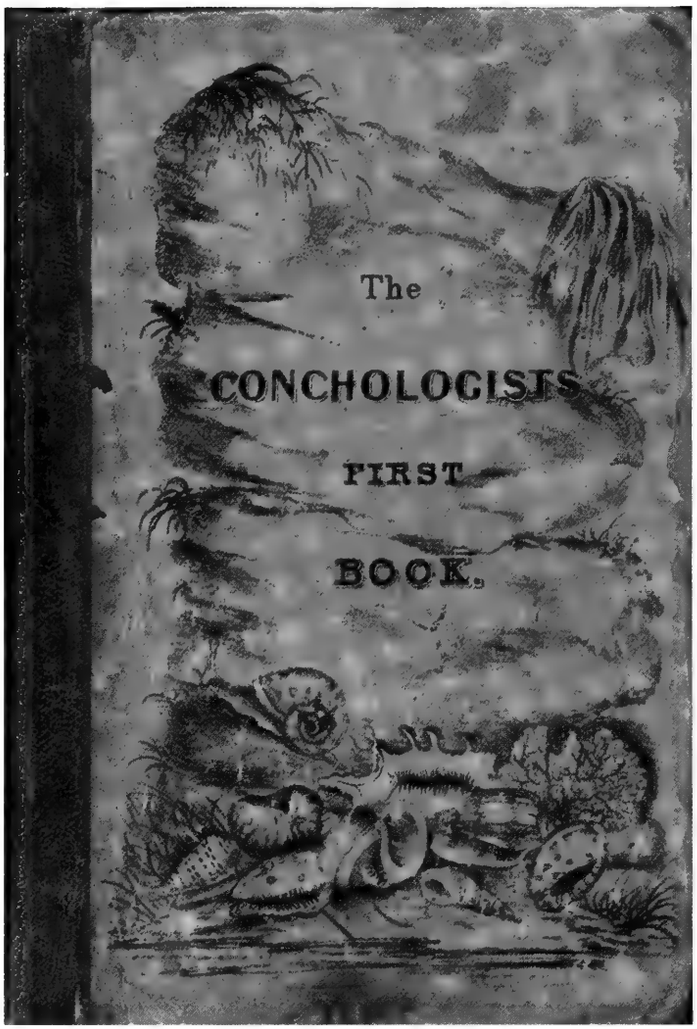
Poe moved to New York, but after only a few months moved back to Baltimore and tried to support himself through his writing. He wrote numerous short stories and newspaper articles, but was often forced to ask friends for money. In 1835 he married his 13-year-old cousin, Virginia Clemm. Poe and his bride moved back to Richmond where he had some limited success writing for various magazines and gained a reputation as a literary critic. He still had problems with employers due to his drinking. In 1842, Virginea became ill with consumption (tuberculosis) and the Poes moved to New York, where he edited and for a short time owned *The Broadway Journal* (it failed in 1846). Virginia died in 1847 and Poe's drinking and erratic behavior worsened. He had several affairs, finally returned to Richmond, Virginia, and resumed a relationship with his childhood sweetheart, Sarah Elmira Royster. Poe died of unknown causes in Baltimore, Maryland – a source of speculation for any number of authors over the years.



Edgar Allen Poe was much more popular with his readers than with his literary contemporaries. His short tumultuous life culminated in a mysterious death that has been variously blamed on drinking, drugs, heart failure, and cooping (a practice where unwilling participants were forced to vote over and over again).

Poe the Conchologist

Some time after his return to Richmond in 1835, Poe was approached by Thomas Wyatt, an English author and lecturer. Wyatt had written "A Manual of Conchology, According to the System Laid Down by Lamarck, With the Late Improvements by De Blainville Exemplified and Arranged for the Use of Students." This rather large tome was published by Harper and Brothers in 1838 and sold for the exorbitant (at the time) price of $8. Wyatt wanted to prepare a condensed version that could be sold to students at $1.50 per book, but the publishers felt it would follow too soon



THE

CONCHOLOGIST'S FIRST BOOK:

OR,

A SYSTEM

OF

TESTACEOUS MALACOLOGY

Arranged expressly for the use of Schools,

IN WHICH

THE ANIMALS, ACCORDING TO CUVIER, ARE GIVEN WITH THE SHELLS,

A GREAT NUMBER OF NEW SPECIES ADDED.

AND THE WHOLE BROUGHT UP, AS ACCURATELY AS POSSIBLE, TO THE PRESENT CONDITION OF THE SCIENCE.

BY EDGAR A. POE.

WITH ILLUSTRATIONS OF TWO HUNDRED AND FIFTEEN SHELLS, PRESENTING A CORRECT TYPE OF EACH GENUS

PHILADELPHIA :

PUBLISHED FOR THE AUTHOR, BY

HASWELL, BARRINGTON, AND HASWELL,

AND FOR SALE BY THE PRINCIPAL BOOKSELLERS IN THE UNITED STATES.

1839.

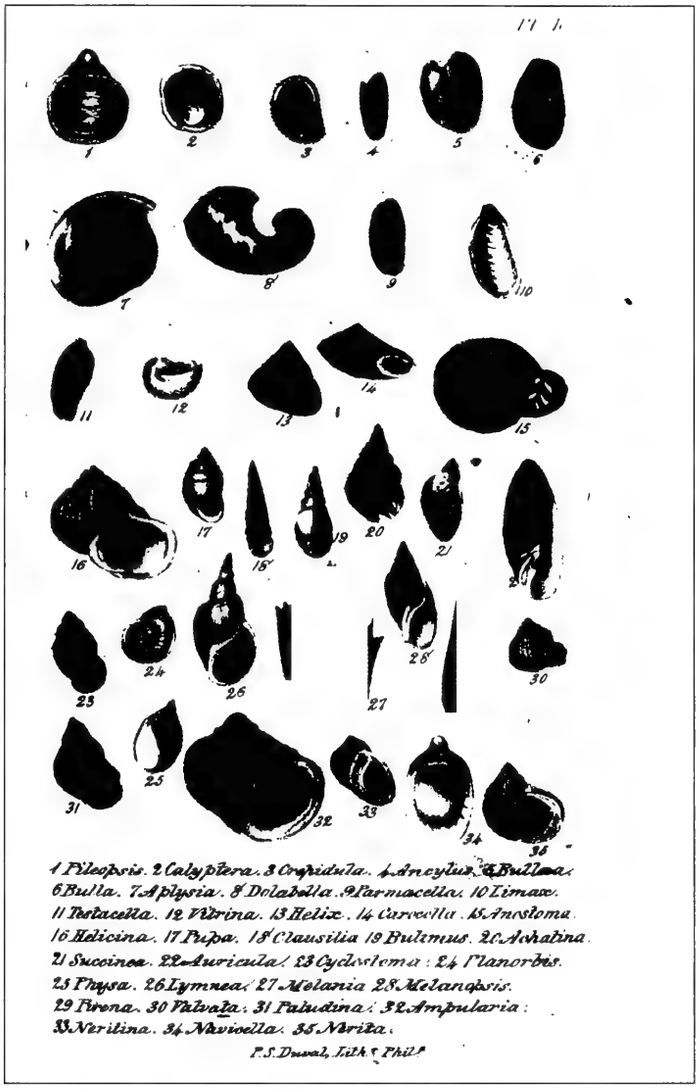
The front cover and title page from "The Conchologist's First Book." During his life, this was Poe's best seller and the only book to go into a second printing. For a $50 fee, Poe forever tarnished an already spotty reputation. Cover image from Wikipedia.

upon his earlier book and would hurt sales. Wyatt decided to go ahead with the smaller book using a different title and publisher. Wyatt knew Poe needed money and he asked Poe if he would lend his name as the author, figuring sales would benefit as Poe was by then well known. For the sum of $50 Poe agreed to the use of his name on a book titled "The Conchologist's First Book."

Most Poe biographers when referring to this episode use words like "shameful" and "hackwork," obviously uncomfortable and adding that Poe only wrote the introduction and preface. In fact, according to Stephen Jay Gould (1993 & 1997), Poe became editor, organizer, and translator. Wyatt's original work was largely based on (or more accurately plagiarized from, although international copyright laws did not yet exist) "The Conchologist's Textbook" by Captain Thomas Brown, published in Scotland in 1837. According to Gould, Poe condensed what Wyatt had written, translated French naturalist Georges Cuvier's scientific classification scheme and used this to reorganize the taxonomy presented in the book. Thus while the listing of the parts of a shell is straight from Brown, repeated in Wyatt, and finally presented by Poe, he did bring more than just his name to the effort. According to Gould, Poe brought a new understanding of the biology of mollusks by addressing both the shell and the anatomy of the animal. Poe added his translation of Cuvier to describe the animal anatomy for each genus. This use of Cuvier's system is credited on the title page of the initial 1839 edition of "The Conchologist's First Book" by Edgar A. Poe.

The book was immediately successful, although Poe never received anything more than the initial $50. The book sold out in two months and a second edition was quickly prepared and published in 1840 (the only work of Poe's to have a second edition during his lifetime). Critics of Poe (and he developed a plethora over the years) were quick to notice the similarities between this work and the 1838 book by Wyatt, as well as the earlier book by Brown. Talk of plagiarism soon surfaced, a charge that Poe had leveled more than once at other authors, most notably Henry Wadsworth Longfellow. When the third edition was published in 1845 it lacked Poe's name.

Looking at this through a 270-year lens we can recognize plenty of culpability without getting involved with quite the passion of most of Poe's critics – even today. "The Conchologist's First Book" is available on Goggle Books and is an interesting read. In Poe's introduction he defines at length what he means by conchology (in his words, "...not infrequently confounded with crustaceology...") and he even provides some justification for the "frivolous or inessential" nature of what many deem an "exclusive and extravagant pursuit." The example he cites is: "The *Conus*



One of the plates from Poe's book, which under the guise of conchology covered mollusks, barnacles, polychaete worms, and brachiopods. Image from Goggle Books.

Cedo Nulli has been sold for three hundred guineas." (Poe, 1839: 6) He finally provides the following:

> The study of Conchology, however, when legitimately directed, and when regarding these *exuviæ* [the shell] in their natural point of view, as the habitations, wonderfully constructed, of an immensely numerous and vastly important branch of the animal creation, will lead the mind of the investigator through paths hitherto but imperfectly trodden, to many novel contemplations of Almighty Beneficence and Design. (Poe, 1839: 7)

So it seems while Poe might not have been quite in tune with the avid interest in natural history and especially conchology of the time, he certainly sensed the admiration and awe found in the pursuit of this avocation. He defines anatomical and shell parts for multivalves (chitons and barnacles), bivalves (mollusks and brachiopods), and univalves (gastropods and polychaete worms). A series of plates follows to illustrate the various shell parts. He then lists four classes, with attendant families and genera.

His first class is Annulata [now the phylum Annelida] where he lists four families with some astounding member genera. His family Dorsalia has two genera: *Arenicola* (with one species of polychaete worm) and *Siliquaria* (with eight species of molluscan Siliquariidae (worm shells)). His second family listed is Maldania with two genera: *Clymene* (with one species, another polychaete) and the scaphopod genus *Dentalium* (with 21 species of Dentaliidae). And so it goes, with more polychaetes and the occasional mollusk.

Poe's second class is Cirrhipeda with a single family and ten genera of barnacles. His third class is Conchifera with 20 families. Here we find the various molluscan Bivalvia, as well as Terebratulidae and Lingulidae (brachiopods). The final class is Mollusca with 22 families of gastropods and the Nautilidae. Poe provides a summary description of both animal and shell for each listed genus. The book ends with a glossary and an index.

"The Conchologist's First Book" is of interest because it provides a look at conchology before the writings of Sowerby (G.B. I, II, & III), Reeve, Von Martens, Philippi, Pfeiffer, Tryon, etc. who defined, in large part, how we view the conchological world. It also has a nice touch of scandal linked to a well-known literary figure. Finally, it is available for free through Goggle Books.

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BLACK AND WHITE AND RED ALL OVER: A CONE-SEEKING ODYSSEY TO ROATAN, HONDURAS

by Karen VanderVen

A Few Red Ones in a Bag

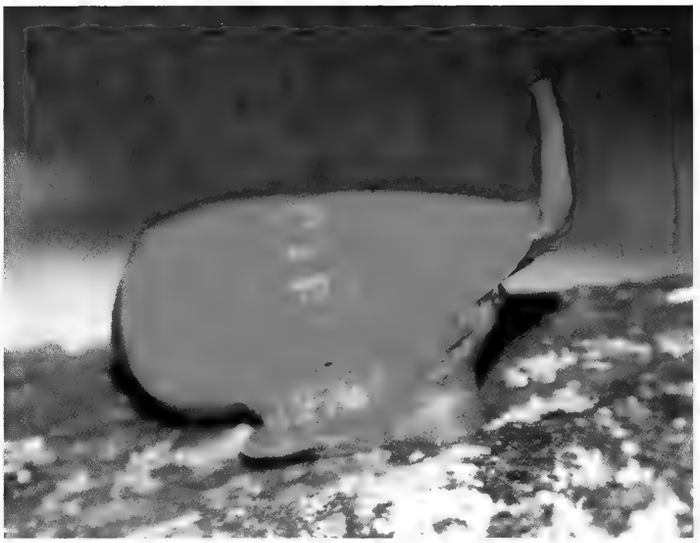
From the sandy beach to offshore reefs to the darkest and deepest ocean depths! Rarely do shellers go on a trip where they come home with shells that come from 1500 feet. On a recent shelling expedition to Roatan, Honduras, shellers not only traveled dozens of miles by both boat and motor vehicle to a wide variety of shelling venues, but also traveled hundreds of feet down. How did this happen? Read on.

Carefully planned and organized primarily as a diving expedition by Randy Allaman and, the trip included Charlotte Thorpe, Karlynn Morgan, Mark Johnson, Scott Robichaud, Bernie and Chantal Stanfield, Lynn and Brenda Leech, Marc Nathanson, and myself.

Undeterred by tales of political unrest in Honduras, and pleased with our direct flights to Roatan, we arrived toting our dive bags through a soon-to-blow-over cloudburst and out to the trucks that would serve as our land transportation and on to the comfortable villas that Randy had arranged for us. From there we traveled all over and around the island, by boat and by vehicle.

This was what I call a "red cone" trip, meaning that the theme shells that everybody wanted to find are red *Conus* species, in this case *Conus kulkulcan* Petuch, 1980, and *Conus granulatus* Linnaeus, 1758. Everybody hoped to come back "with a few red ones in a bag" as Mark put it. But that wasn't all. We also hoped to find a distinctive little black and white shallow water cone that Randy had discovered on previous trips.

Even though cones seemed to be the focal point, we found wonderful shells in six different ways: night diving, day diving, day and night shallow water beach walking and snorkeling, reef shelling, descending in a submersible, and purchasing shells from locals. This article will describe each of these experiences and what we found.



Above: The Atlantic glory-of-the-seas, *Conus granulatus*, a welcome addition to any collection. One of the red cones we hoped to find on this trip. Photo by Charlotte Thorpe.

Below: *Conus granulatus* cleaned and ready to thrill a collector. Photo by Marc Nathanson.

In a Cavern, In a Canyon

Each night as dark approached we would pile our gear and ourselves into the trucks, drive to a dive shop and get set up on the boat. As the stars in the sky and the lights on the shoreline winked, we turned on our dive lights, jumped in, one by one, and headed for the bottom.

And what a bottom it must have been, since none of us ever got there! What we found were underwater reef structures on walls that went hundreds of feet down. They were the most unusual I've ever seen. Large coral fingers, one after the other, extended up from the depths and it was here that we shelled. These coral fingers were covered with lush growth, colored sponge patches, and algae of varying shades of green. Punctuating these unusual structures were crevices and ledges, ostensibly the best habitat to find the rare cone shells we sought.

Swimming up, down, around, and between the coral fingers, with often very little distance between them, we would alternate a scan of the walls with a peek into the crevasses. Fortunately "Dr, Bernie" brought along a powerful strobe light that was suspended off the stern of the boat. Periodically I glanced up

Above: *Conus kulkulcan*, a diminutive and variably colored species. This was the other red cone (even though it is often brown) we were looking for. Photo by Charlotte Thorpe.

Below: *Conus kulkulcan* cleaned and showing some of the color variation for which it is known. Photo by Marc Nathanson.

The reef off Roatan, Honduras, is a rich unspoiled environment. The steep drop offs into much deeper water provides for a variety of wildlife. Photo by Charlotte Thorpe.

and was grateful for the bright flashes of light that told me I hadn't gone too far. I was careful as well to always keep the surface in sight and when I looked up and saw that I was about to enter a covered cave, I back finned… fast.

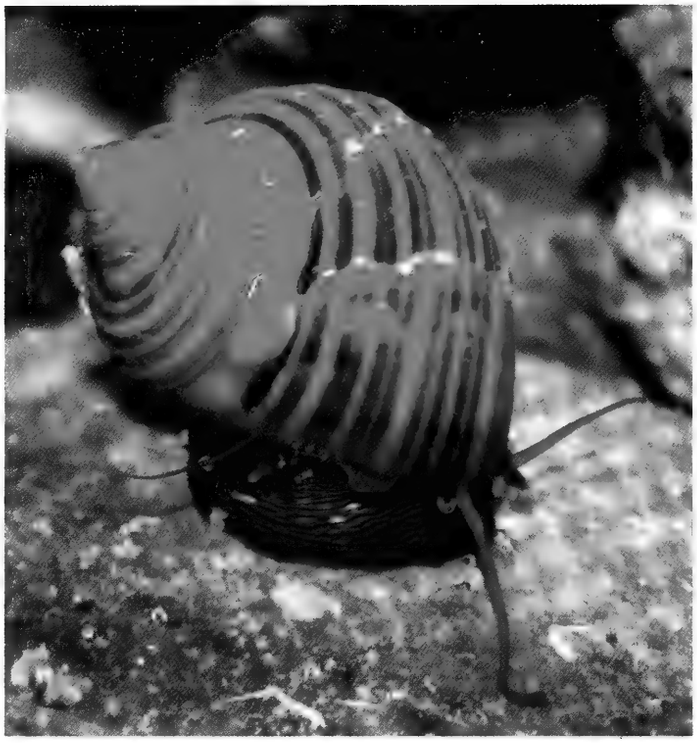
As the nights went by, the best techniques for locating these coveted cone species emerged and the finds seemed to be more spectacular each time, with the shells seemingly becoming more colorful and larger. Many of the *Conus kulkulcan* were a stunning bright blood red, but there were orange and brown ones as well. Several *Conus granulatus* were humongous, over 50mm, with one spectacular specimen found, as shellers often marvel, "right under the boat."

The cones, of course, were not all. There were colorful *Turbo cailletii* Fischer & Bernardi, 1856, *Vexillum pulchellum* (Reeve, 1844), *Colubraria obscura* (Reeve, 1844), *Latirus martini* Snyder, 1988, *Hemipolygona cariniferus* (Lamarck, 1816), and *Polygona abbotti* (Snyder, 2003). Other phenomenal shells included a perfect *Cymatium femorale* (Linnaeus, 1758) collected by Mark and a huge *Hemipolygona cariniferus* collected by Charlotte. Even though most cones were found at night, I must mention Karlynn's stunning daytime find: a bright orange-yellow *Conus daucus* Hwass, 1792.

Two if By Day

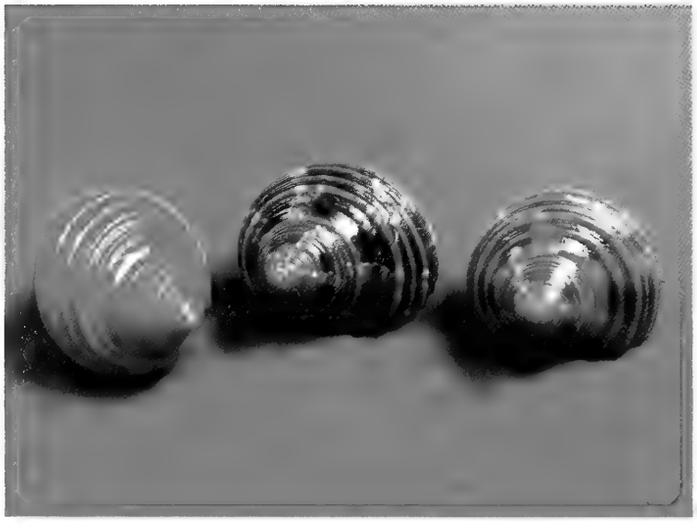
While the emphasis was on night diving, when 'things would come out' (read: red cones), we did not come home empty-handed from several days of "two tank" daytime diving. On a dive of 60 feet or so off the northern shore, we were on a sandy wall where I found huge *Trachycardium muricatum* (Linnaeus, 1758) with bright yellow interiors. Mark and Marc also collected this species, as well as *Oliva reticularis* Lamarck, 1811, and a brown spotted *Prunum guttatum* (Dillwyn, 1817).

This warmed us up for the next dive. Randy advised us on how to find the rare and elegant little *Calliostoma orion* Dall, 1889, by looking inside the blue, gray, and lavender tubular sponges we would find between 40 and 60 feet down. Sure enough, as we cruised along at these depths the seascape was punctuated every now and then with these beautiful sponges. We would peer inside, hoping each time to not only find one or more of the elusive top



Above: This red and green beauty that seems decked out for Christmas is *Turbo cailletii* Fischer & Bernardi, 1856. This same species occurs in southern Florida waters, but there it is a brown shell with much smoother ribbing. Photo by Charlotte Thorpe.

Below: Some of the color varieties found in *Turbo cailletii*. Although this shell is only about 20-30mm in size, its variable bright colors make it a true prize. Photo by Marc Nathanson.



shells, but also that the opening in the sponge would be wide enough to allow a hand to reach within without damaging the sponge. Most of us retrieved one or several.

This was my lucky dive. As I cruised along I noticed a round seaweed-covered little mess in front of me. On an impulse I picked it up. Scratching away some of the growth revealed, unbelievably, a pair of *Laevichlamys multisquamata* (Dunker, 1864). The only challenge would be to get the fragile scallop safely home, and after that to clean it without breaking the delicate valves.

One morning some of us went on a relatively deep wreck dive. As soon as I reached cruising depth, something bumped me from behind. Before I could think "Uh-oh, a shark checking me out for lunch," I had turned around and found a pair of very sociable, dark olive-colored groupers. They wanted to be petted and were rather like underwater cats. They would swim off and by clicking fingers, one could actually call them back for more petting. Not a shell to be seen on this wreck, but it was a delightful dive.

Patching It Up

After a day of diving and a night dive, Randy suggested that we not pack it in just yet. A very interesting off-shore snorkel awaited us in the late hours of the evening where in the sand patches might be some of the very special and distinctive little black and white cones he had earlier described. We all energetically took the plunge. Somehow, shellers are tireless when there's something new and exciting to be sought.

Would we find any cones? I searched and searched in the occasional sand patch, examining every little black splotch, and unbelievably, finally saw a distinctive cone shape. Assiduous and systematic exploration yielded several more. Most of us did find these interesting little *Conus* species that I hope will be named after Randy Allamand. I was happy as well that evening with several *Fasciolaria tulipa* (Linnaeus, 1758), *Prunum prunum* (Gmelin, 1791), and a fine pair of *Laciolina laevigata* (Linnaeus, 1758).

Reef Encounters

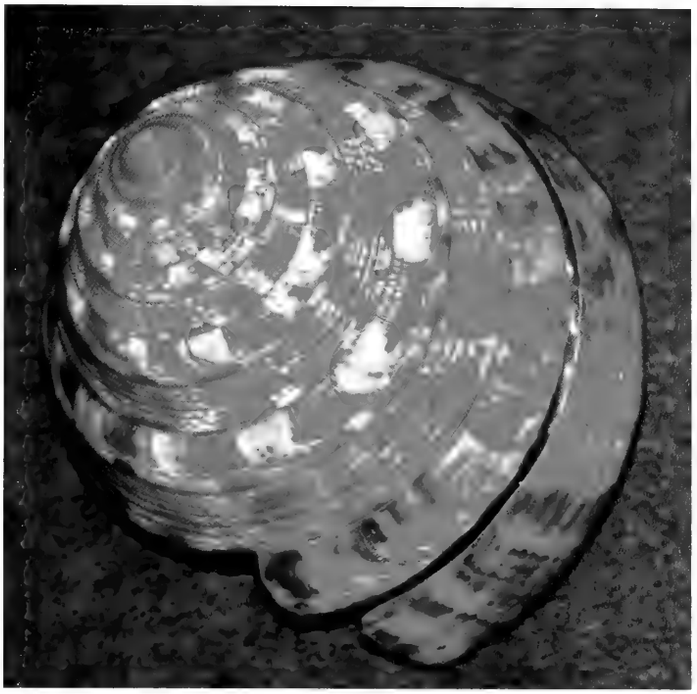
Our shallow water shelling was done along the beaches, immediately offshore in sand patches nestled among the eelgrass and on the inshore reefs that fringe the island. One morning, casually walking along a beach, Scott spied something where gentle waves were lapping. A handsome *Melongena melongena* (Linnaeus, 1758)! Several of us found one or two nice specimens in these shallows.

Periodically some of us would swim out to the reef that fringes the entire island. After covering what seemed like several football fields' length of eelgrass, we would spot the slabs, corals, and sand patches of the reef. Among the species found here were: *Conus regius* Gmelin, 1791, *Conus jaspideus* Gmelin, 1791, *Leucozonia nassa* (Gmelin, 1791), *Leucozonia ocellata* (Gmelin, 1791), *Arene cruentata* (Mühlfeld, 1824), *Cassis flammea* (Linnaeus, 1758), *Tellina fausta* (Pulteney, 1799), and *Pilsbryspira nodata* (C.B. Adams, 1850) (syn. *Crassispira maculata* d'Orbigny, 1847). There was also a complete color range of beautiful dove shells, *Columbella mercatoria* (Linnaeus, 1758). Shaking a dead queen conch, *Strombus gigas* (Linnaeus, 1758), in the dense grass yielded three small dead *Phyllonotus pomum* (Gmelin, 1791) and a nice little tun, *Tonna pennata* (Mörch, 1852) (syn. *Tonna maculosa* Turner, 1948). The small shells came with me; the queen stayed.

Joys as Deep as the Ocean

Many shellers are familiar with Karl Stanley's submersible, which is located on Roatan so that he can take people down

Above: Scott Robichaud (left) and Randy Allaman (right) stand in front of Karl Stanley's submersible. This is basic collecting equipment if you want *Entemnotrochus adansonianus* and *Bayerotrochus midas*. "Shells are were you find them," and in this case you find them well beyond SCUBA depth. Photo by Randy Allaman.



Here is the pay off for the dedicated conchologist who happens to own or knows somebody who owns a submersible, the spectacular *Entemnotrochus adansonianus*. Photo by Charlotte Thorpe.

Below: One of the cameo carved queen helmets, *Cassis madagascariensis*. Photo by Randy Allaman.

thousands of feet into the dark depths where he plucks rare slit shells off the wall (their habitat at these depths). So Randy took us over for a visit. Karl brought out some shells from recent underwater trips. There were a few large handsome *Entemnotrochus adansonianus* (Crosse & Fischer, 1861) and two *Bayerotrochus midas* (F.M. Bayer, 1966), known more popularly as the King Midas slit shell. We all admired his wonderful finds. I was especially taken with a specimen of *Bayerotrochus midas* from 1500 feet or so deep. Light orange and cream were highlighted by the striations on the dorsum, and with the subtle color of the base it looked particularly striking. Beautiful and, I thought, unobtainable by me.

Not surprisingly, others were intrigued with the possibility of a submersible trip and it was arranged for Scott and Randy to take the plunge the next morning. When we returned the next day to drop them off, Karl showed us two more *Entemnotrochus adansonianus* that had been removed from the wall the preceding night

Before we left, a very beneficent arrangement was worked out for me to get the *Bayerotrochus midas* shell that is now the pride of my collection. Scott and Randy, after an exciting trip down the wall in the compact submersible, each brought back a stunning *Entemnotrochus adansonianus*. There was also a *Sconsia lindae* Petuch, 1987, and *Dibaphimtra janetae* Petuch, 1987, for Scott.

Cameo Appearance

There are always fun on-shore excursions on shell trips to tropical countries, and this trip was no exception. Randy had a friend in one of the towns who carved beautiful scenes with a nautical or oceanic theme out of queen helmets, *Cassis madagascariensis* Lamarck, 1822. On our excursions we were taken to see these beautiful and fascinating works of art and we were able to watch the artist carving them. Several of us made purchases. These exquisite cameos can also be purchased at the Bailey-Matthews Shell Museum on Sanibel Island.

We timed our trips into town for shopping for when the cruise ships were docking and the locals were most likely to have shells out for tourists to buy. We roamed up and down the main drag, exploring indoor souvenir malls and casting an eagle eye for shells. Two adorable young school boys attached themselves to our group. Recalling from other tropical trips that some enterprising children will actually find shells for you (for a handsome tip, of course) we importuned them to find people selling "caracoles."

The as yet un-named cone from Roatan Island. Photo by Marc Nathanson.

Two of the *Melongena melongena* we found in the shallow water of this fascinating island. Photo by Marc Nathanson.

They did not know anybody we had not found ourselves, so we finally handed them dollar bills and they scampered off to find, literally, greener pastures.

We did find some shells for sale here and there. As a result of these purchases I brought home several species of deep-water volute, one of my favorite families, even though all of them have, as they say, "seen better days." Their correct identification is uncertain, but they may include *Voluta demarcoi* Olsson, 1965 (junior syn. of *Voluta polypleura* Crosse, 1876?), *Voluta morrisoni* Petuch, 1980, *Voluta hilli* (Petuch, 1980) (also a junior syn. of *Voluta polypleura* Crosse, 1876?), and *Voluta virescens* Lightfoot, 1786, all species that can come from deep-water off Honduras. There were also *Conus garciai* da Motta, 1982, *Conus spurius lorenzianus* Dillwyn, 1817, *Cassis flammea* (Linnaeus, 1758), *Cypraea zebra* Linnaeus, 1758, *Cypraea cinerea* Gmelin, 1791, *Fasciolaria tulipa, Oliva reticularis, Oliva scripta* Lamarck, 1811 (form caribbaeensis), and *Strombus pugilis* Linnaeus, 1758.

Many shellers say they'd rather shell than eat, but when there's good food to be had on a trip, all the better! We ate breakfast and snacked in our villas, often while watching a little flock of hummingbirds at our porch bird feeder. On some evenings we went out to dinner. One of the highlights was a native home-cooked lunch of truly *fresh from the sea* seafood at a little restaurant, "Island Mom's" right on the water. Most of us got a plate heaping with lobster and crabs.

Dishing it Out

Most evenings after the night dive, there would be "Shell and Tell" in one of our villas in which the divers would display their evening's take, laid out on dishes from the kitchenettes, for the rest to admire. Several shellers, including Marc, Randy, and Charlotte, took photographs of the shells, including those accompanying this article. Seeing these has given me the message that it is finally time for me to stop using throwaway cameras and take lessons from these expert photographers.

Lucky for all, Charlotte brought her aquarium along. She would pick up an interesting rock or slab each night to use as a backdrop and to hopefully tempt a specimen retreated into its shell out of hiding. Some specimens would immediately become energized, emerge and begin strolling around; others remained timid and stayed in their shell. Everybody enjoyed periodically checking the tank for a changing scene.

Home A-Cone

My cone quest was enhanced with a little bit of luck that last night and very much so by some lovely gifts slipped to me by several very generous shellers. Following excellent advice from Charlotte on how to clean the *Laevichlamys multisquamata* without breaking it, (soak it in mineral oil for several days) the shell indeed came clean. The *Bayerotrochus midas* is as beautiful as ever.

Perhaps the best way to conclude is to mention a review of the highlights of our finds that Randy gave at the end of the trip:

It's an extraordinary shell trip when you come back with so many new species for your collection, as I think we all did. Coupled with the sheer adventure, it just doesn't get better.

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Karen VanderVen
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Collecting Shells: A Passion, Joy, and Mission

Zvi Orlin

Many shell collectors have enjoyed their hobby for almost all of their lives, but this wonderful pastime came to me late in life. After retirement, two of my close friends and I began hiking all over Israel. Among the hiking routes we took were jaunts along the coasts where I noticed piles of shells. As I enjoyed naming all of the animals and plants observed on our excursions, I started collecting shells and trying my hand at labeling them. Professor Barash of the Tel Aviv University helped me in classifying my finds and a new hobby was born.

At first I only collected Israeli marine shells and found only a few local books to assist me with identification. For our Red Sea coast I could find only a single book, which was totally inadequate and out-of-date. I therefore decided to draw up a checklist of Red Sea shells. After a few years of accumulating material and compiling lists of species, I managed to find a colleague, Henk Dekker in Holland, who agreed to join me in my project. After two trips to Holland for concerted joint efforts, we managed to conclude our list and had it published by the Dutch malacological journal, *Vita Marina*, as a 46-page supplement to one of its issues.

To share my joys with other shell collectors, I started writing articles for conchology journals. I must admit that for encouragement and help Tom Eichhorst was the finest editor I contacted and hence most of my articles were published in this magazine.

During the course of my travels overseas with my wife, I started collecting shells from many additional locations, broadening my international collection and interests. I also began exchanging shells with collectors from various parts of the globe, making some very close friends. I even made some special trips for the express purpose of collecting shells.

The most memorable of these was to Indonesia. In a short fortnight's visit to three islands I accumulated a collection of 367 species. Later when a new book in English was published on Indonesian shells, I discovered that some of the shells I had found were not mentioned, so I wrote to the author, Bunjamin Dharma. At his request I sent him a list of all the species I collected and the locations where they were found. He was most impressed and published an article with all the details in their local journal, *Berita Solaris*. Later he published one of my articles from *American Conchologist* titled "Mollusks and the Wallace Line." It was fellow shell collectors like Bunjamin that added most to my joys in collecting.

After a few years I had a few thousand samples of marine shells in my collection and realized it would be impossible to continue without the help of a computer. From the outset I recorded all of the data available on each specimen. I felt it should be my mission to secure the use of my collection for future scientific study. In 15 years I accumulated over 10,000 lots, consisting of some 5,800 species.

Lately I debated what should be done with my collection when I passed away, finally deciding to donate it to one of our local universities. As I am getting on in years and didn't want any of the data I had recorded to be lost, I decided to supervise the transfer of my collection personally and chose the Tel Aviv University for my donation. Its mollusk collection is completely computerized and was in need of an influx of new international species, predominant in my collection.

I sent my entire collection to the Tel Aviv University (TAU), under the watchful guidance of Henk Mienis, the curator of the Jerusalem University Mollusk Collection and my mentor and colleague who has assisted me all these years by checking and correcting my identifications. I am pleased that I am still available to answer any questions that may arise about my collection (not possible by most of the former posthumous donators).

I have been asked if it is difficult to forego the pleasure of continuing collecting shells and being deprived of my collection. First, I have retained a few hundred samples (duplicates of those sent to TAU) for my daughter and granddaughters at their request. Second, to my pleasure, TAU will make available to its students and researchers all the species of my collection, so all of my collecting will not have been in vain. The University is only one hour's journey by train from my home, so I can always review the collection at my leisure. Third and most importantly, I am now intensively studying evolution and hope to collect a few local fossils. I will then be in close contact with the biological world from time immemorial, which has always been my main interest. I am sure this will keep me happy for the next few years that hopefully still await me.

There is a sequel to my story. I just received an email informing me that two new Red Sea species have been named after my colleague Henk Dekker and myself, in honor of being co-authors of the "Checklist of Red Sea Mollusks." What greater honor could any conchologist wish for?

Well dear readers, thank you for your attention. This will probably be my last article in this journal as I will be far behind in time, enjoying the enchanting annals of prehistory as told by fossils.

Zvi Orlin – the Desert Gazelle
zviorlin@actcom.co.il
(my nickname is Zvi, Hebrew for gazelle, and I am a lover of our desert's wide-open and relatively silent spaces where I have hiked extensively and where gazelles are often seen)

Join in the celebration of the Conchologists of America 2010 Convention in Historic Boston, Massachusetts, and help observe the 100th year of the Boston Malacological Club. Convention dates are August 27th through August 31st, with pre-convention tours on August 26th and 27th.

The host hotel is the Boston Park Plaza, located in the heart of downtown Boston. The address of the Boston Park Plaza is 50 Park Plaza at Arlington Street, Boston, MA 02116-3912. Only minutes from Logan International Airport, the hotel is also close to many of Boston's finest attractions. Rates start at $199 plus 14% tax for a standard stateroom. The Boston Park Plaza has recently renovated its rooms, as well as six in-house restaurants and many other amenities, and is the most affordable venue for downtown Boston. Please see the enclosed registration insert for details and options for other room types. Reservations can be made by calling (617) 426-2000 or (800) 225-2008 and you must mention Conchologists of America to receive the convention rate, or use the website: **http://www.starwoodmeeting.com/Book/cac0826**. The COA rates will be honored three days prior to three days after the convention dates. The special website address is to reserve the regular staterooms. If a suite or some other type accommodation is desired, use the hotel's regular website address: **http://www.bostonparkplaza.com**. Logan Airport is about six miles from the hotel and the trip to the hotel costs approximately $25-$35 by taxi. There is no hotel shuttle, but independent shuttles cost $14 per person and are available by calling the Park Plaza concierge service. Note: as in other cities in the northeast corridor, parking is expensive in Boston and is typically at least $20 or more for 24 hours. The Park Plaza does not have its own lot, but there are several private lots nearby; see the registration insert for details on parking options. Special temporary parking arrangements will be made for bourse dealers for loading/unloading at the setup and take down times. For those of you planning to drive, directions to Boston and the hotel will be provided in the registration insert.

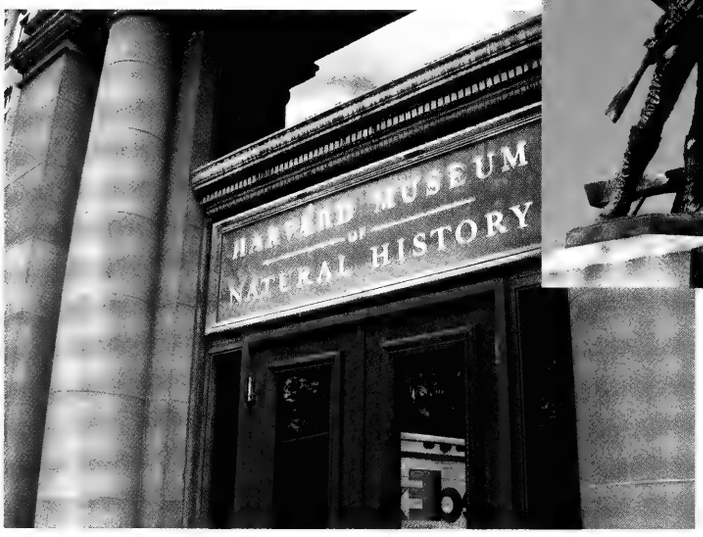
The convention schedule will start with pre-convention tours on Thursday, August 26th and continue with a.m. tours Friday, August 27th; see details on these tours below. Registration will begin Friday morning, and the convention opening will be at 1 p.m., with the welcoming party Friday evening. Registration will continue Saturday, August 28th and the COA annual meeting will be held on the afternoon of Saturday, the 28th, with the oral auction held that evening. Sunday, August 29th and Monday, August 30th will consist primarily of programs. The dealers' bourse setup will be Monday in the morning, with the bourse opening at 1 p.m. that afternoon. The bourse will conclude Tuesday morning August 31st and the farewell banquet will be held that evening. Silent auctions, raffles, and door prizes will be conducted daily as in the past and the detailed schedules for these will be available in your registration packets.

The Park Plaza Hotel at night (above).

The banquet room at the Park Plaza Hotel (above).

Come early and you will be able to enjoy three field trips on Thursday and two on Friday morning before the official convention opening ceremony. Here are the field trips planned for Thursday August 26th; see the insert for details on departure times, duration, and cost.

Historic Concord, Mass. Tour the location of the start of the American Revolution. Located 16 miles west of Boston, Concord was home to Ralph Waldo Emerson, Henry David Thoreau, and Louisa May Alcott. The tour will comprise visits to the Old North Bridge, the Alcott House, the Concord Museum, and the Concord Library, which houses an exhibit of the Shells of Concord, collected by Boston Malacological Club member Kristina Joyce. Through careful planning and preservation efforts, much of Concord still looks as it did in revolutionary times.



Harvard Museum of Natural History, Cambridge, Mass. (above) - Tour the fabulous collections, including the Mollusk Department, Mineral Exhibit (deemed one of the best in America), the Great Hall of Mammals, and the famous exhibit of Glass Flowers (which truly has to be seen to be believed).

Shelling Trip – Although not as bountiful as a Florida mud flat, shelling can be productive on the beautiful east coast beaches of Massachusetts, particularly north of Boston. The trip is planned for either or both of two such locations, Nahant Beach in Lynn and Revere Beach (seen above). Several of our New England shell experts from the Boston club will host this trip. A stop at the famous Kelly's Restaurant, a Revere Beach staple since 1951, is planned for lunch.

Re-enactment of the British crossing the Old North Bridge across the Concord River in Concord, Massachusetts (above) and Daniel Chester French's iconic statue of the Minuteman on the western bank of the river looking towards the bridge (left).

Field Trips scheduled for Friday morning August 27th include the Boston Duck Tour and the U.S.S. *Constitution* and museum. See the convention insert for details on departure times, duration, and cost. Both tours will return in time to get lunch and make the convention opening ceremony.

Boston Duck Tour (above) – A great way to see many of Boston's famous sites and places, the Boston Duck Tour is done in WW II style amphibious landing vehicles. The tour takes about 90 minutes and includes a tour guide and a short water excursion providing a wonderful skyline view of the city. You will see the Boston Public Garden, Massachusetts State House and Beacon Hill, the Old State House, Faneuil Hall and Quincy Market, Bunker Hill Memorial, and the U.S.S. *Constitution* to name a few. Take a virtual tour at this link below, and crank up the volume! http://www.bostonducktours.com/tour_video.html

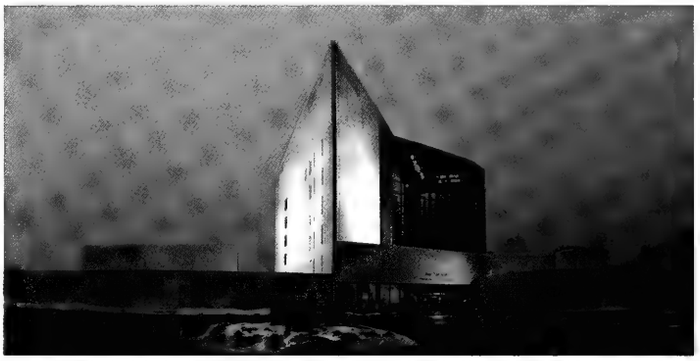
U.S.S. *Constitution* (above) and Museum – You will go aboard the oldest commissioned warship in the world. A veteran of the War of 1812, this maritime treasure has been restored to its original splendor. The two hour tour also includes a visit to the U.S.S. *Constitution* Museum. The ship and the museum are located in the Charlestown Naval Yard.

Other things to take in – There are many other worthwhile places and things to see in Boston. There was not enough time to schedule all of these as field trips, so for those coming early or staying later, here is a list that we recommend to do on your own.

Faneuil Hall/Quincy Market complex (above) – A short taxi ride from the hotel and close to the waterfront, this is the most visited tourist site in Boston. Originally a marketplace, these historic buildings were beautifully restored in the 1970's and house a myriad of restaurants, stores, and tourist item vendors. The Faneuil Hall auditorium was used in the first protests against taxation and is still in use today.

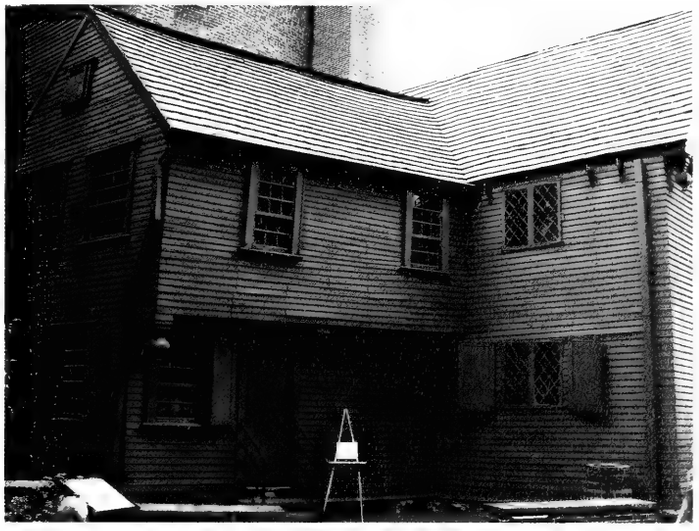
Top of the Pru and the Hancock Towers (right) – Spectacular views of Boston and Cambridge can be seen from the top of both of these famous landmarks located just a few blocks from the hotel in Back Bay. The Prudential has an excellent restaurant 'Top of the Hub.'

Boston Public Garden (above) – Only two blocks from the hotel, this beautiful and serene area is an oasis within the city. Don't forget to take a ride on the famous Swan Boats.



JFK Library and Museum (above) – Located in Dorchester, a Boston neighborhood, the JFK Library houses the papers and memorabilia of our 35th president.

Other interesting places include: a tour of **Fenway Park (above),** home of the Boston Red Sox; the **Paul Revere House (above right)** in Boston's North End; the **New England Aquarium (below)** on Boston's waterfront, and **The Old Manse (below right)**, at different times home to both Ralph Waldo Emerson and Nathaniel Hawthorn. The Park Plaza concierge can help arrange transportation to these venues.



Rowe's Wharf and the Boston Waterfront (above), in downtown Boston. Along the waterfront you will find a variety of restaurants, a marina, and a water transportation terminal.

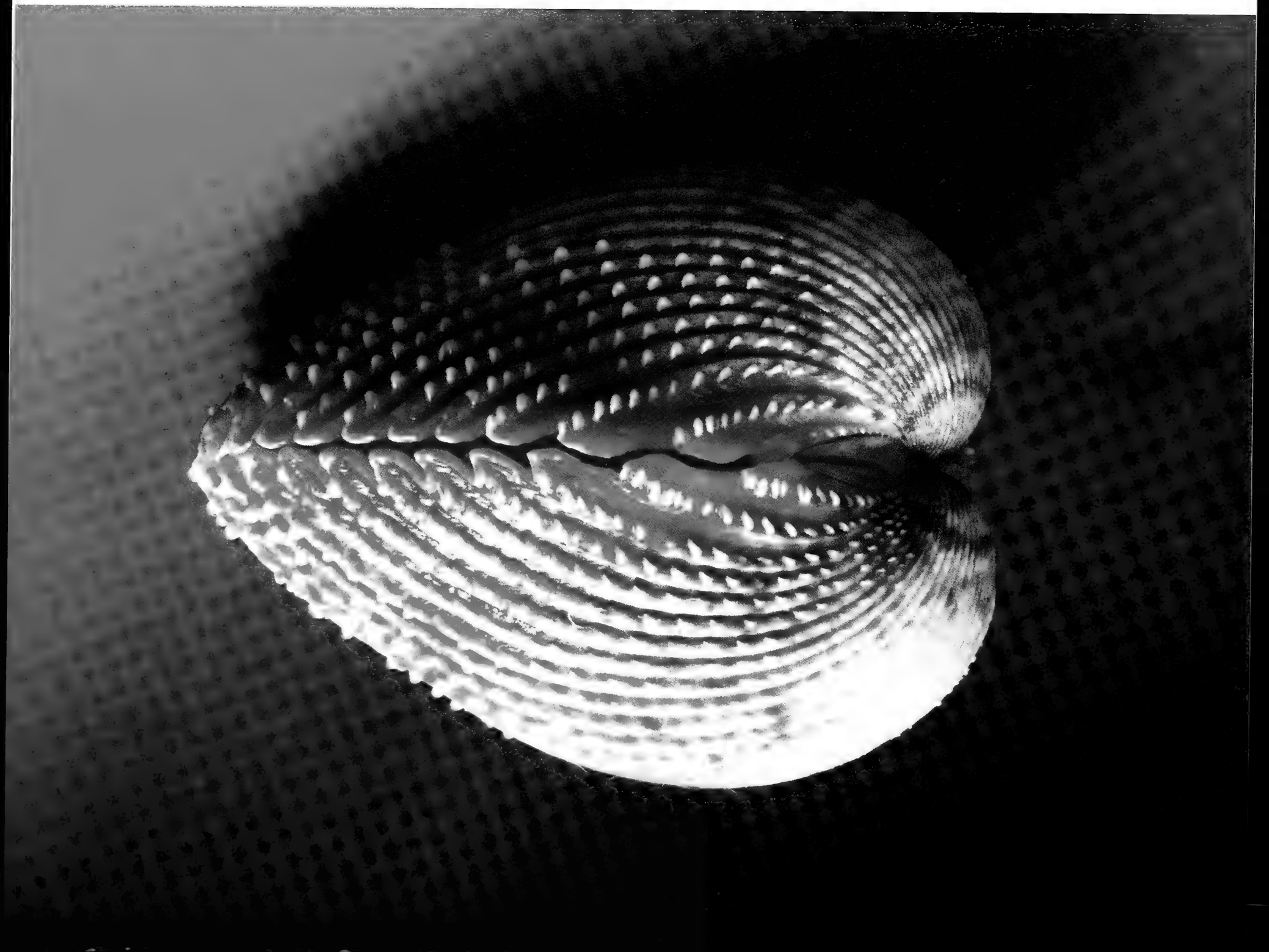
Donations

Please donate shells and shell-related items that can be used for raffle items, silent auctions, or door prizes, as well as specimen-grade shells for the oral auction. Shell donations should include pertinent data (name and locality). Donations are tax deductible and help support COA grants and research. Financial donations are accepted as well and help offset the expense of awards and other convention necessities.

Categories for Financial donations are:

Argentum	$10-$99
Aurantium	$100-$199
Diamantine	$200+

In order to be listed in the 2010 COA program booklet, donations must be postmarked no later than July 10th, 2010. All shell-related donations should be sent to Don Robak, 6 John St., Chelsea, MA 02150. Financial donations should be sent to Warren Graff, 18 Noyes Lane, Merrimac, MA 01860. **COA and the BOSTON MALACOLOGICAL CLUB APPRECIATE YOUR SUPPORT!**



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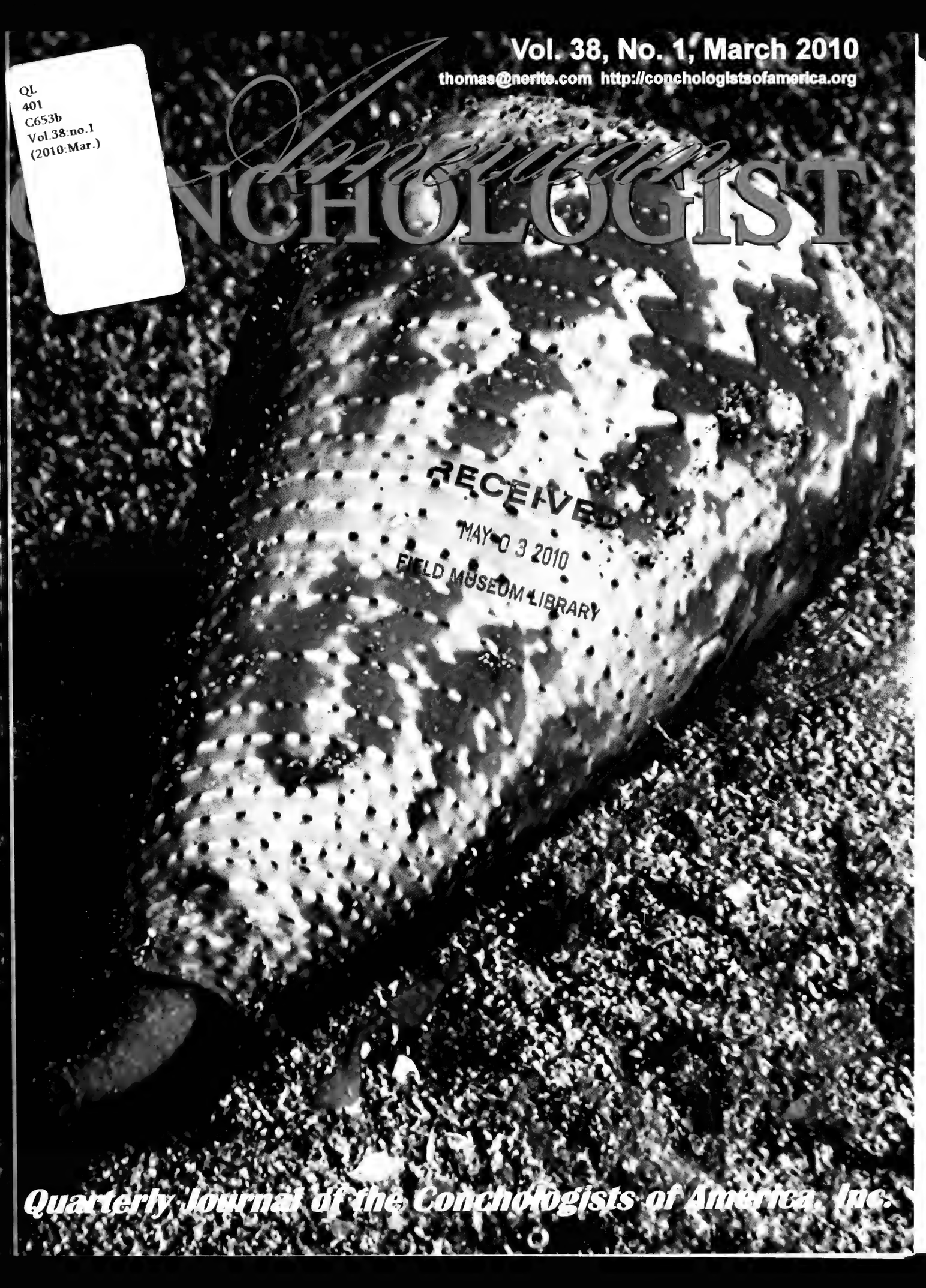

Quarterly Journal of the Conchologists of America, Inc.

Vol. 38, No. 1

CONCHOLOGISTS OF AMERICA, INC.

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world.

In 1995, COA adopted a conservation resolution: ***Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.***

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MEMBERSHIP is for the calendar year, January-December, late memberships are retroactive to January. 2010 DUES: $25; postal surcharge: USA none ($5 additional for USA first class), $5 for Canada and Mexico (total of $30), $15 for all other countries (total of $40). New members apply to Doris Underwood, Membership Director. Please pay in U.S. dollars ($), or with a check on a U.S. bank with Transit Enrouting and Account Numbers printed at the bottom, or with money order. Make checks payable to: CONCHOLOGISTS OF AMERICA. Notify Membership Director with change of address.

BACK ISSUES are available from Doris Underwood, Membership Director. Prices: prior to 1999, $3 each, 2000 to 2008 $4 each, 2009 to current, $5 each; postage extra.

OFFICERS

Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver (owned and operated by the University of Georgia) at: listserv@listserv.uga.edu Instructions for joining Conch-L are on the COA web site.

AMERICAN CONCHOLOGIST

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IN THIS ISSUE

Front cover: *Conus cedonulli dominicanus* Hwass, 1792, actively hunting at night on a sandy slope in 80 feet of water along the lee side of Union Island in the grenadines. Photograph courtesy of Charles Rawlings. This may be the first published photograph of this species *in situ*. According to the newest systematics by Tucker & Tenorio (2009), this is now *Protoconus cedonulli dominicanus* (see article on page 12).

Back cover: *Conus cedonulli cedonulli* Linnaeus, 1767.

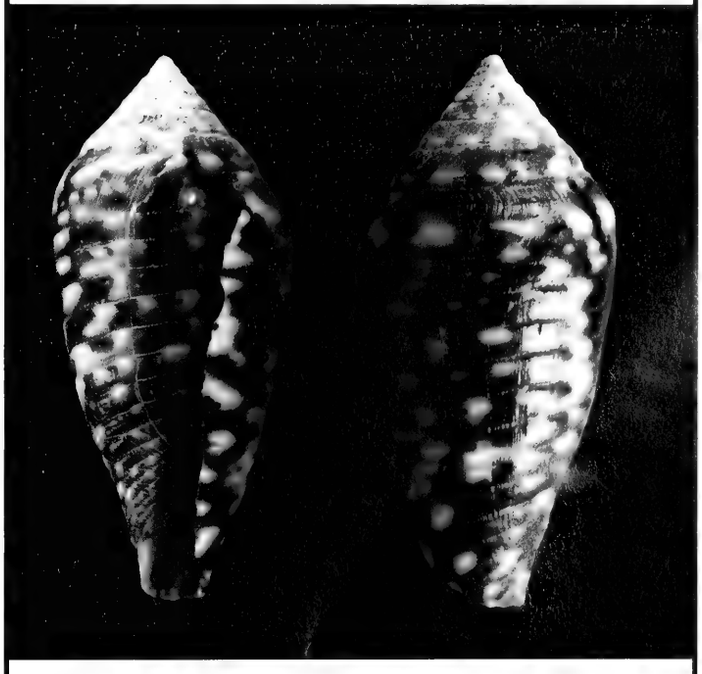
Letters & Comments:

Dear Tom,

The cone shell that is shown on page 26 of 37(4) is *Jaspidiconus damasoi* (Cossignani, 2007), which was described in Malacologia Mostra Mondiale 55:11; type locality was 30-40m off Camocin, Ceara, Brazil. This species ranges around the southern Caribbean as well. I have seen specimens from Honduras, Yucatan, Colombia, and Brazil.

Yours,
John K. Tucker
Illinois Natural History Survey

Ed. Response: Thanks John. I am sure our readers will be glad to have a name to apply to this handsome little cone. The shell in question is shown below. The original image of this cone shown in the last issue as well as this image are courtesy of Marc Nathanson. The background has been replaced.



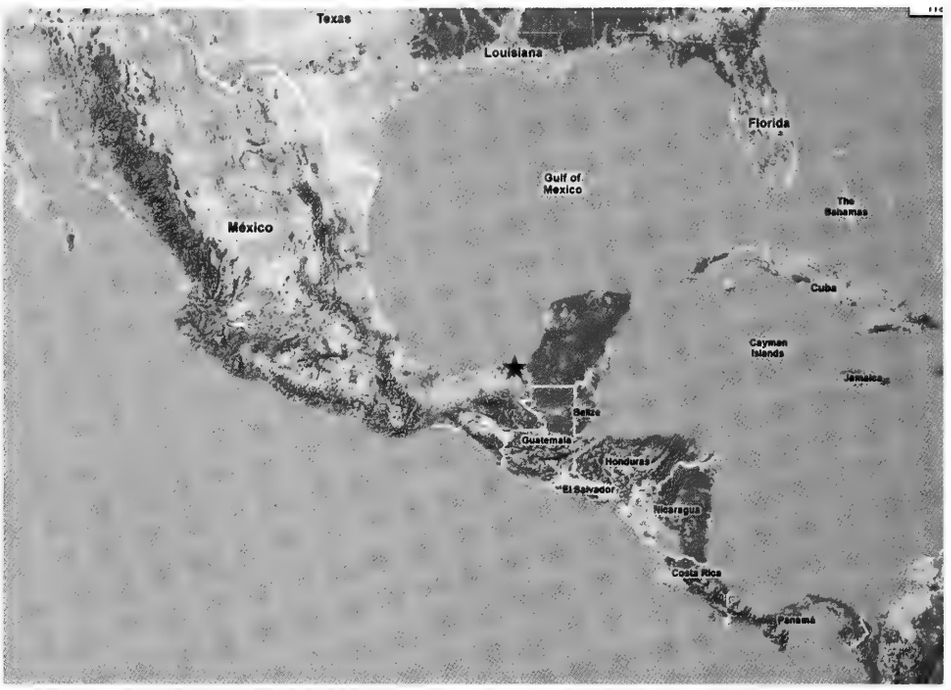
To all planning on attending the COA convention in Boston, **Shellebration Boston**, 27 Aug - 31 Aug, or more importantly, to all who are still undecided, the room rates for the hotel have been substantually reduced. Rooms are now $169 per night (plus tax), instead of the original $199 per night. These are upgraded rooms with free Internet access. Reservations can be made by calling (617) 426-2000 or (800) 225-2008 or the website **http://www.starwoodmeeting.com/Book/cac0826** You must mention COA to receive the convention rate. See you there.

Tom Eichhorst

Costoanachis sertulariarum (d'Orbigny, 1839) in the Gulf of Mexico

Emilio F. García

In May, 2009 a monumental work dealing with the biodiversity of the Gulf of Mexico was published by Texas A&M University Press. The publication was sponsored by the Harte Research Institute for Gulf of Mexico Studies, Corpus Christi, Texas. The chapters on mollusks treat 2455 species; the chapter on gastropods alone reports on 1742 species (Rosenberg et al., 2009). *Costoanachis sertulariarum* has not been reported for this important body of water until now.



A few years ago I obtained several lots of shallow-water shells from Isla de Aguada, State of Campeche, Mexico (18°47'N, 91°28'W). These shells were collected in January 1978 by a group of biologists whose interest in mollusks was only circumstantial, the reason why I eventually ended up with material. Among the specimens was a lot of 6 shells identified as *Costoanachis avara* (Say, 1822). As is often the case when I am busy with other matters (which is often the case), I gave the shells a brief glance and catalogued them as such. While working on recently obtained mollusks from Bocas del Toro Archipelago, northwestern Panama, I went back to check on my western Atlantic specimens of *Costoanachis*. When I looked at the Isla de Aguada lot, this time under more attentive scrutiny, the single specimen of *C. sertulariarum* immediately stood out (Fig.1).

Costoanachis sertulariarum is a wide-spread species in the western Atlantic. It has been reported from the east coast of Florida to Tierra del Fuego (Rosenberg, 2009), so it is not surprising that it has been found in the Gulf. What is surprising is that it has not been reported until now, as important collections of Mexican shallow water mollusks of the Gulf have been made by García-Cubas (1963, 1981) and García-Cubas et al. (1990a, 1990b, 1992, 1994, 1995, 1999), and by the more accessible Vokes and Vokes (1983). Although *C. sertulariarum* has a number of characters that separate it from other *Costoanachis*, Dr. Harry Lee has observed that the species has "microscopic pits…which impart a satiny patina to the surface"(2009:114). This character is readily observable in the specimen at hand (see Fig. 1).

Isla de Aguada is very near the southernmost point of the Gulf of Mexico, next to Ciudad del Carmen, so it is presumed that *C. sertulariarum* will eventually be found along the northern coast of Yucatán Peninsula, and perhaps elsewhere in the Gulf.

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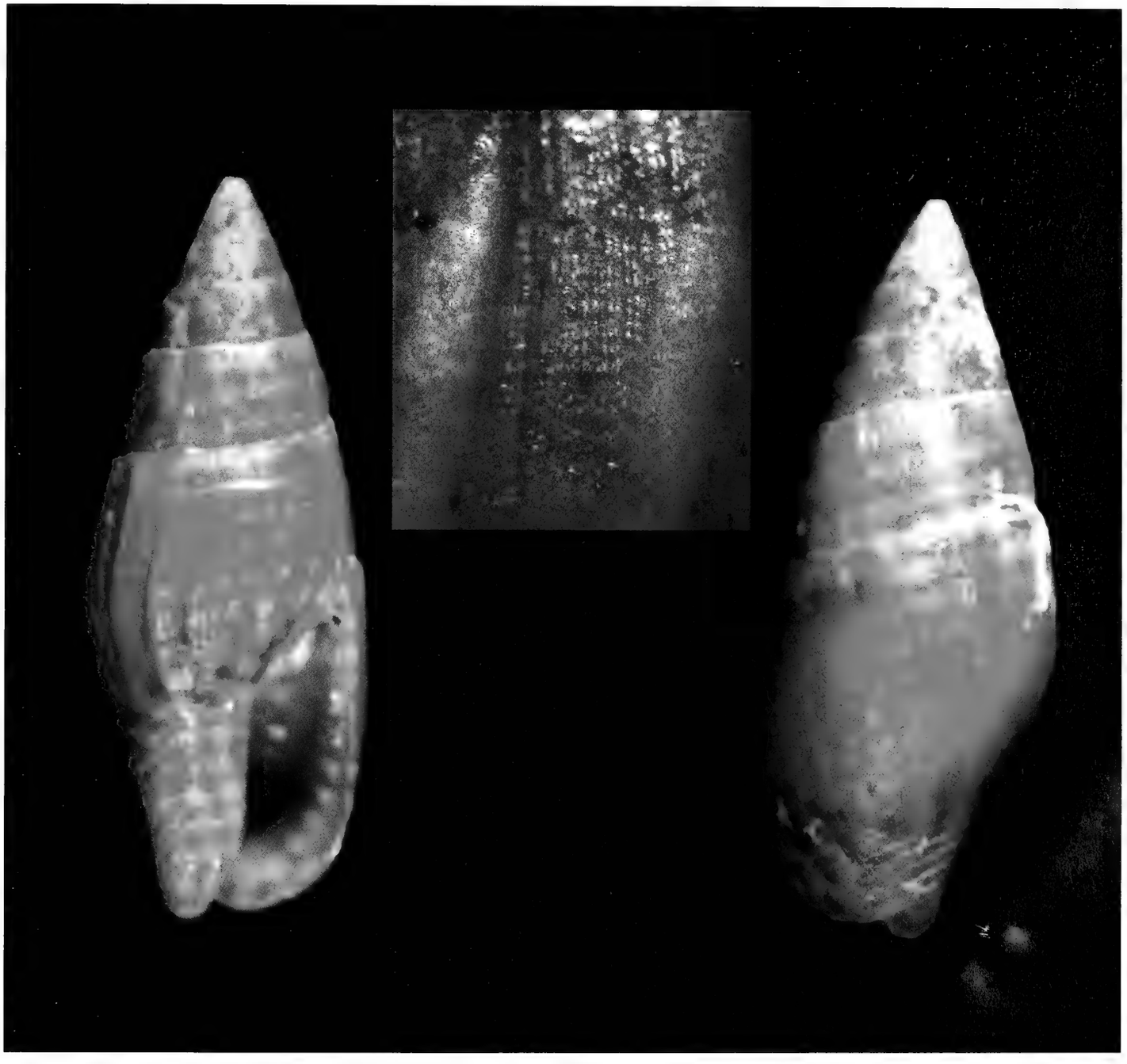

***Costoanachis sertulariarum* (d'Orbigny,1939), Isla de Aguada (18°47'N, 91°28'W), Campeche State, Mexico, 10.3 mm.**

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The Power Of One

Emilio F. García

Some 15 years ago, the well-known muricid expert Emily Vokes told me about one of her favorite collecting spots in Central America. It was a beach on the west coast of Nicaragua called Masachapa. What made this place interesting was that Anastasio Somoza, the former dictator of the country, had used the rocky area of the beach as a quarry, extracting blocks of coral rock to construct the country's roads. With time, all the nooks and crannies of the rectangular shapes left behind by the project were covered by moss and became a welcome habitat for micro-mollusks. I was so intrigued by Emily's narration that in August 1995, I decided to go and check out the place for myself.

Masachapa is popular with Nicaraguan vacationers, not because of any natural beauty as far as I could see, but presumably because of its relatively easy access from Managua, the capital of the country. And the accommodations were not the Waldorff either, so let's say my first impression was one of disappointment.

One forgets such minuscule details, however, when one is on the hunt. So I ignored the rather crowded sandy beach, walked south, crossed the mouth of a small stream, and reached the exposed rocky reef where I immediately began to find very promising "grunge" at the tide line behind the rocks. This material, when it was sorted out in my room, yielded many interesting species, including a single specimen of *Cyclothaca corrugata* Stearns, 1890, a species that, according to A. Myra Keen, author of *Seashells of Tropical West America* (1971), had not been collected since the original specimen was described in 1890 (see García, 1996).

In November 2008, I had the opportunity to return to Nicaragua. It was basically a touring trip with a friend, but after exploring colonial cities and climbing volcanoes (yes, I did collect a few land snails) we went to Masachapa to spend a day. All I needed was a bag-full of grunge to keep me happy, but I guess November was not as good a month as August. The grunge was there and the pickings reasonable, even though the quantity was not what I had found the time before. After extracting the shells, one specimen in particular attracted my attention. It was a colorful 6mm shell that, had I been collecting in the Caribbean, I would have identified on the spot as *Retilaskeya bicolor*, without hesitation. I figured that this Panamic species was probably the "cognate" equivalent of *R. bicolor*; in other words, an ancestral single species, after having being separated by the division of the ocean with the rise of Central America, had become two species.

When I arrived home and checked the index in A. Myra Keen's book I was confounded by the fact that there were no species at all assigned to the genus *Retilaskeya*. Having failed in this first obvious step, I went to the appropriate family and started looking for my shell in the images provided by the author. This time I did find the species, but under the genus *Eumetula*, with two other species listed under that genus as well. So, what now? I had found the specific epithet for the species, but did it belong to *Eumetula* or to *Retilaskeya*. And so the research began.

To make a long story short, my investigation ended with the conclusion that none of the three species assigned to *Eumetula* in Keen's publication belonged in that genus (see García, 2009). The Nicaraguan species, as well as a second species listed under *Eumetula*, belonged in the same genus as the western Atlantic *Retilaskeya bicolor,* and the third species belonged in a genus called *Cerithiella*. Moreover, it is very probable that the genus *Retilaskeya* does not exist in America, and that the two western Atlantic species, *R. bicolor* and *R. emersoni*, as well as the two Panamic species now assigned to *Retilaskeya*, are better placed in a new genus of their own.

All of this because I picked up a single 6mm shell, invisible to my eyes at the time of collecting, on a little-known beach in Nicaragua.

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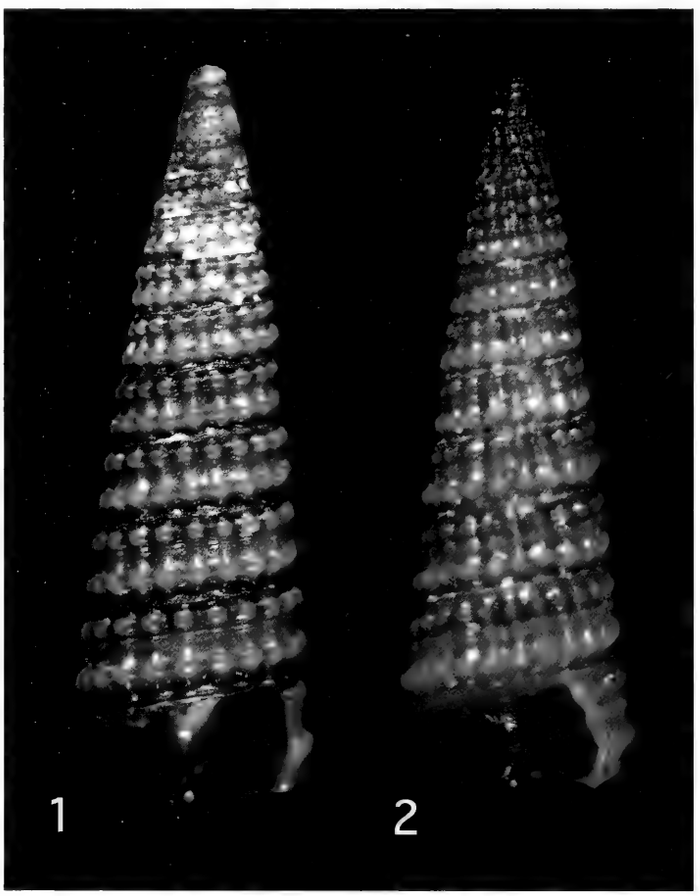

1) *Retilaskeya bicolor* (C. B. Adams, 1845), Bocas del Toro, NW Panamá, 8 mm. 2) *Retilaskeya intercalaris* (Carpenter, 1845), Masachapa, west Nicaragua, 6 mm.

SCUM XIV: Southern California Unified Malacologists

Lindsey T. Groves

The 14th annual gathering of **S**outhern **C**alifornia **U**nified **M**alacologists (SCUM) at the City of San Diego's Environmental Monitoring and Technical Services Division Laboratory was attended by thirty-three professional, amateur, and student malacologists and paleontologists on Saturday, January 23rd, 2010. This informal group continues to meet on an annual basis to facilitate contact and keep members informed of research activities and opportunities. In keeping these gatherings informal, there are no dues, officers, or publications. It is hoped that the continuing success of informal groups such as SCUM, Bay Area Malacologists (BAM), Mid-Atlantic Malacologists (MAM), Ohio Valley Unified Malacologists (OVUM), and the recently organized FUM (Florida Unified Malacologists) will encourage more regional groups of malacologists and paleontologists to meet in a likewise manner.

Host Wendy Enright and co-host Tim Stebbins welcomed the group to SCUM XIV and in SCUM tradition all present were given the opportunity to introduce themselves and give a short update about current mollusk related activities. Most presentations were informal but several were more detailed. Of particular interest was the presentation by Ángel Valdés of California Polytechnic State University, Pomona, who updated the group on the current research of his students Elysse Gatdula-Ornelas and Bonnie Lei on nudibranch phylogenetics. Terry Rutkas presented a fascinating narrative about the uses of mollusks in the various islands and cultures of Oceania. Shawn Wiedrick presented his research on micro turrids of the tropical Indo-Pacific, which is a daunting task. As always, in addition to his busy teaching schedule, Doug Eernisse (Calif. St. Univ. Fullerton) updated everyone on his extensive research projects with his colleagues and grad students. Chuck Powell followed Doug's example and updated everyone on his various paleontological projects. Pat LaFollette presented a follow up to his SCUM XIII presentation on the availability of malacological literature on the internet. He noted that the amount of pertinent molluscan literature available has doubled in the last year.

Numerous discussions and comments resulted from these presentations. The Western Society of Malacologists and the American Malacological Society will hold a combined meeting at San Diego State University from June 26th through the 30th. WSM President George Kennedy and AMS President Doug Eernisse encouraged all SCUM to attend the meetings. Sessions will include Pacific biogeography, invasive mollusks, and current research in molluscan paleontology. SCUM XV will be hosted by Kelvin Barwick of the Orange County Sanitation District in a yet to be chosen venue in January of 2011.

SCUM XIV participants and respective interests and/or activities:

Kelvin Barwick (Orange Co. Sanitation District): Continues research on mollusk and polychaete faunas of the Southern California Bight and is training the OCSD staff on his invertebrate identification techniques.

Hans Bertsch (San Diego, CA): Continues population studies of the nudibranch faunas of Bahía de los Angeles, Golfo de California, area of Baja California, Mexico. He is also comparing faunas mentioned in the Steinbeck classic *Sea of Cortez* to those living in the area today.

Don Cadien (L.A. Co. Sanitation District): Currently researching environmental biology of mollusks and crustaceans (especially aplacophorans) from bathyal and abyssal localities off southern California.

Bob Dees (Orange Coast College): Has recently retired as President of OCC but continues to collect shells.

Pat Don Vito (San Diego Nat. Hist. Mus.): Volunteers at the San Diego Natural History Museum in the Paleontology Department.

Doug Eernisse (Calif. St. Univ. Fullerton): In addition to teaching duties and serving as current President of the American Malacological Society, Doug has a myriad of research projects with professional and grad student colleagues including: chitons collected in benthic monitoring programs of the Southern California Bight; new species of the sea star genus *Henricia*; shield limpet habitat analysis; *Argopecten* larval development; and Pliocene chitons of the San Diego Formation.

Wendy Enright (City of San Diego): Continues monitoring program of shallow and deep water mollusk faunas of the Southern California Bight.

Wes Farmer (San Diego Shell Club): Continues to examine the environs of Torrey Pines State Park. He also showed a video on squid capture.

Lance Gilbertson (Newport Beach, CA): Research Associate at the Nat. His. Mus. L.A. Co., continues with research on terrestrial mollusks of the southwest.

Lindsey Groves (Nat. Hist. Mus L.A. Co.): In addition to research on fossil cowries of the eastern Pacific and continuing the companion volume to Keen & Bentson's (1944) *Check List of California Tertiary Marine Mollusca*, he is producing a list of fossil mollusks of Hawai'i for an upcoming publication and co-authoring a paper on the Miocene cowries of the Cantaure Formation of Venezuela with Bernie Landau and Dirk Fehse.

Carole Hertz (San Diego Shell Club): Current editor of *The Festivus*, the publication of the SDSC.

Jules Hertz (San Diego Shell Club): Current Vice-President and business manager of *The Festivus*.

Dan Ituarte (City of San Diego): Participates in benthic monitoring programs with the city of San Diego.

Scott Jordan (Hacienda Heights, CA): Collector of rare molluscan literature and publications that focus on the history of malacology.

George Kennedy (Brian F. Smith & Assoc., Poway, CA, and SCUM co-founder): Continues his research of Pleistocene marine terraces of California and molluscan faunas of the Pliocene San Diego Formation. Current President of the Western Society of Malacologists, meeting at San Diego St. University in June.

Pat LaFollette (Nat. Hist. Mus. L.A. Co.): A research associate at LACM and currently reviewing and rearranging the Pyramidellidae in the malacology collection. Pat is also interested in the availability of molluscan literature on the internet which has increased significantly since SCUM XIII.

Jackson Lam (Calif. Poly. Univ. Pomona): Graduate student at Cal. Poly. Pomona under the direction of Ángel Valdés.

Jim McLean (Nat. Hist. Mus. L.A. Co.): Jim continues work on his eagerly anticipated volumes on North Pacific shelled gastropods. His monograph of worldwide Liotiidae is nearly complete.

Chuck Powell II (U.S. Geological Survey): Continues with research of Neogene and Quaternary mollusks of California. In particular the invertebrate paleontology and biostratigraphy of the Purisima, San Joaquin, Santa Margarita, and Panorama Hills formations of central California.

On stairs (l to r and top to bottom): Pat LaFollette, Mary Stecheson, Chuck Powell; Danielle Taranko, Jackson Lam, George Kennedy; Ángel Valdés, Doug Eernisse; Nerida Wilson, Wes Farmer (raised camera).
On floor (l to r): Jim McLean, Scott Jordan, Gina Valdez, Tim Stebbins, Carole Hertz, LouElla Saul, Lance Gilbertson, Jules Hertz, Don Cadien (between Jules & Kelvin), Kelvin Barwick, Bob Dees, Lindsey Groves, Carol Stadum, Scott Rugh, Terry Rutkas, Hans Teuchert.
Front row (l to r): Shawn Wiedrick, Ron Velarde, Wendy Enright, Hans Bertsch.

Present at SCUM XIV but not in photo: Pat DonVito, Dan Ituarte, & Paul Tuskes. Image taken by Don Ituarte with the author's camera.

Scott Rugh (San Diego Natural History Museum): Collection manager at SDNHM.
Terry Rutkas (Pacific Conchological Club): Presented a detailed talk on the uses of mollusks in the cultures of the islands of Oceania and how the various peoples navigated the vast expanses of the Pacific. The take away message was … shells made it possible for Neolithics to populate Oceania.
LouElla Saul (Nat. Hist. Mus. L.A. Co., Res. Assoc.): Continues research of Cretaceous mollusks with Richard Squires (Calif. St. Univ. Northridge) particularly on the fossil aporrhaid genus *Tessarolax*. She recently published a major paper on the Mesozoic bivalve subfamily Opinae with Richard Squires.
Carol Stadum (Oceanside, CA): Currently researching the Saddleback Valley calcarenite (= "Topanga" Formation?) and its invertebrate paleontology and depositional environments. The fauna includes numerous mollusks, echinoderms, bryozoans, polychaetes, calcareous algae, and *Desmostylus* a Miocene marine mammal with peg-like teeth.
Tim Stebbins (City of San Diego): Participates in benthic monitoring programs with the city of San Diego.
Mary Stecheson (Nat. Hist. Mus. L.A. Co., Invert. Paleo): Curatorial Assistant currently databasing and rearranging gastropod type collection.
Danielle Taranko (Calif. Poly. Univ. Pomona): Attending with Jackson Lam (see above), no report.
Hans Teuchert: Guest of SCUM member Hans Bertsch, no report.
Paul Tuskes (San Diego Shell Club): Biologist and current treasurer of the San Diego Shell Club.
Ángel Valdés (Calif. Poly. Univ., Pomona): Teaches Evolutionary Biology and continues phylogenetic research on opisthobranch gastropods of the Caribbean and Panamic provinces.
Gina Valdez: Attending with Scott Jordan (see above), no report.
Ron Velarde (City of San Diego): Continues with benthic monitoring projects with the city of San Diego.
Shawn Wiedrick (Pacific Conchological Club): Current President of the PCC and interested in all areas of shell collecting. Volunteers at the Nat. Hist. Mus. of L.A. Co. identifying micro- turrids of the Indo-Pacific.
Nerida Wilson (Scripps Institution of Oceanography): No report.

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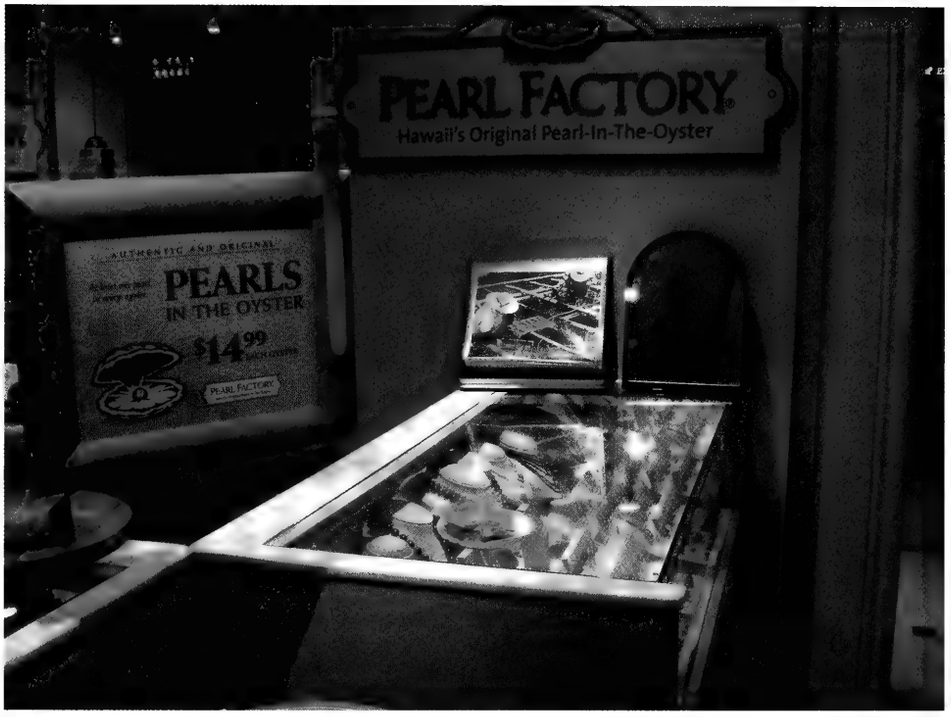
Pearls in the Nevada Desert?

by Joaquin Inchaustegui

On October 10, 2009, my wife and daughter accompanied me on a rest and relaxation trip to Las Vegas, Nevada, for the stage shows, the inexpensive buffets, and perhaps a little gambling in the casinos along The Strip. While in the Flamingo Hotel lobby to pick up some show tickets for later that evening, we passed by a little shop called "The Pearl Factory," where they exhibited some beautiful pearl necklaces, ear rings and other jewelry for sale. In a small wooden dish I noticed some shells in water and I asked what they were and why they were on display. The sales girl said they were Hawaiian pearl oysters with lovely pearls hidden inside the mantle folds and that if I bought one we could open it and see what size and color pearl I would find.

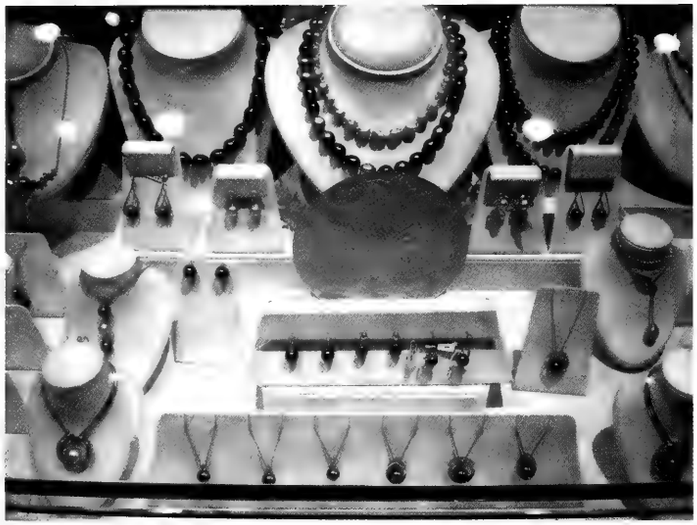


The pearl shop in the lobby of the Flamingo Hotel in Las Vegas. At first I thought it was just a pearl jewelry shop, but small tub of water and oysters roused my interest. I was surprised to learn that while they did indeed sell pearl jewelry, they also provided shoppers the chance to go "diving" for their own pearls.

I selected one and the girl tapped the bowl with a wooden spoon 3 times and all the other girls joined in and sang "ALOHA." Then she opened the oyster and told me to look for the pearl by pushing down with my finger until I felt the pearl and out came a lustrous, shiny, white pearl of about 8mm diameter. She continued with her sales pitch and enticed me to buy another to see if I could find a larger pearl or even a pink one, which she assured me was entirely possible , showing me some in a glass display case as a sample of what could be found. Since I am easily sold when it comes to mollusks, I selected another and out came a 7mm white pearl.

These pearl oysters are not at all related to the true oysters (Ostreidae), but belong to the family Pteriidae, which produce a thick shell when mature, such as the golden lip oyster (*Pinctada maxima* (Jameson,1901)) and the black-lipped oyster (*Pinctada margaritifera* (Linnaeus, 1758)). These have a great commercial value for mother-of-pearl (nacre) manufacture. Apart from the nacre trade, under certain circumstances they produce valuable natural pearls which are as lustrous as the nacre on the inside of the valves. In many instances this pearl is only a by-product of the oyster shell fisheries which in 1980 had a price of $1200 per ton down to about $200 per ton depending on the thickness, color and quality of the shell. Other pearl oysters are *Pinctada albina sugillata* (Reeve, 1857) *Pinctada perviridis* (Reeve, 1857) and *Ostrea spondyloideum* Gmelin, 1791 (senior synonym of *Pedum pedum* Bruguière, 1792), the last of which is family Pectinidae. The most famous of the pearl oysters used in the culture of pearls is *Pinctada fucata martensii* Dunker, 1872, from the West Pacific. *Pinctada fucata martensii* is a small shell of only about 2 inches in diameter and it is not valued for its shell nacre, but for human food and the culturing

Next to the display case of pearl jewelry was this small wooden tub or dish that contained the live pearl oysters. Large bamboo forceps were used to sort the shells and remove them for inspection, keeping skin oils and other contaminants safely away from the water. The draw here was the lure of hidden treasure, which certainly worked in my case.



A better view of the display case with pearls of various colors and shapes. The various settings on display here do well at highlighting the natural luster and beauty of the pearls.

While not as elegant as a pearl in a gold setting, there is something both satisfying and exciting about uncovering your own pearl from the oyster that created it.

of pearls. The pearl culture business is now over a billion dollars per year industry.

This brings to mind that while snorkeling in the Caribbean with Dr. R. Tucker Abbott in March of 1971, as I reported in *Hawaiian Shell News*, Tucker said to me, "Jo-Jo, you know a single female oyster can produce 500,000 offspring in one spawning season! Imagine what she could do if she was married!"

The Japanese originated the cultured pearl industry by inserting a small bead (or "seed") made from the freshwater mussels called naiads from North America. These mussel shells were exported to Japan by the ton because they provided the base for easily culturing beautiful pearls that were produced more uniformly, in a shorter period of time (in some cases today as little as 2 months), and with better overall value than those produced by nature.

Pearls occur naturally when certain mollusks are infected with parasitic organisms or other irritants, usually when these irritants burrow through the shell into the tissue inside. With grains of sand or other inorganic grit the process begins when the grit is lodged in the soft tissue of the mollusk. The animal's immune system triggers the secretion of a mucus-like substance called nacre, which coats the irritant to protect the mollusk from damage. Over time the layers of nacre build up, resulting in the formation of a pearl within the shell. Pearls tend to retain the shape of the original irritant, so most natural pearls are not round. Naturally occurring pearls are rare, and gem quality naturally round pearls even more rare. Many thousands of mollusks can be killed in the search for one round pearl. This is why natural pearls command the highest prices, as the yield is unpredictable. Some natural pearl necklaces are so rare today that a perfectly matched necklace can sell at auction for $100,000 or more. As natural pearls are so desirable and rare, pearl farmers have worked out ways to stimulate the pearl formation process, greatly increasing the yield of pearls.

There are several types of cultured pearls:

FRESHWATER PEARLS are cultured in freshwater lakes, ponds, and rivers. They are nucleated by inserting a small piece of mantle tissue from a donor naiad into a young mollusk's soft tissue. This process can be repeated up to 25 times per valve after the pearl has been initially harvested. The pearls are then dyed (if needed), drilled and strung for sale. These freshwater pearls are generally low quality, irregularly shaped, and with a reduced luster compared to the saltwater variety. They fetch a lower price and so are in demand for costume jewelry.

SALTWATER PEARLS are grown in marine oysters and are usually more round and of a higher quality than freshwater pearls. This is because marine oyster pearls are nucleated with a seed nucleus as well as the donor mantle tissue that forms the bead sac. Since the seed is round the resulting pearl is round. There are several types of saltwater pearls available which causes some confusion due to the various names for these pearls.

AKOYA PEARLS are grown in the Akoya oyster, the smallest of the saltwater pearl oysters. As a result, Akoya pearls are some of the smallest saltwater pearls available and are rarely seen at more than 8 mm. Akoya pearls are bead-nucleated cultured pearls produced in *Pinctada fucata martensii* and *Pinctada fucata fucata* (Gould, 1850). Akoya pearls were traditionally farmed in China and Japan, although these days most Japanese Akoya pearls are actually from China. These pearls have a rich deep luster and are generally round or near round with an overall color of either white or cream with overtones of rose pink. They are extremely desirable for matching with existing jewelry due to their consistency of shape, color and quality, and can command fairly high prices.

TAHITIAN PEARLS are formed in the black-lipped oyster (*Pinctada margaritifera*) in and around the French Polynesian Islands. The black-lipped oyster is one of the largest pearl producing mollusks, and so the size of the resulting Tahitian pearls is larger than Akoya pearls. Tahitian pearls are much darker than other saltwater pearls and naturally occur in a range of colors, often called "black", although a true black pearl is quite rare. Most have hues of other colors, most often green. My wife, Rose, has a beautiful

This is the business end of the Pearl Factory, originally started in Honolulu, Hawai'i. It seems to fit in Las Vegas at least as well as the fake pyramid and Statue of Liberty.

The necklace and ear-rings are freshwater pearls, the black pearl ring is a Tahitian pearl from Huahine, French Polynesia, and the double pearl ring is from the Pearl Factory, Las Vegas.

"black" pearl ring she bought in French Polynesia on the Island of Huahine in 1990.

SOUTH SEA PEARLS are cultured in the waters between Australia and China, using *Pinctada maxima* oysters. South Sea pearls can be between 9 and 20mm, some of the largest cultured pearls in the world. South Sea pearls have a much thicker layer of nacre than others, up to 6mm thick and have a satiny luster. They come in a variety of pale hues and are very desirable.

CORTEZ PEARLS are farmed in the sea around California and they are also referred to as New World black pearls. Cortez pearls are produced in the Panamic black-lipped oyster *Pinctada mazatlanica* (Hanley, 1856) and the rainbow-lipped oyster *Pteria sterna* (Gould, 1851). Both produce highly iridescent pearls. Most are baroque, with round pearls forming less than 3% of normal yield.

MABE PEARLS are the semi-round pearls often used in jewelry. They are used in making earrings and rings. They are formed by using a hemispherical nucleus during nucleation and implanting it against the shell. When harvested they are referred to as blister pearls and are worked into Mabe Pearls by cutting away the shell and filling the back with resin. This is then mounted on a mother-of-pearl back. In my shell collection I had a *Pinctada margaritifera* from Tahiti with a large attached blister pearl on one of the valves. The pearl was almost entirely black and if properly worked it could have become a beautiful Mabe Pearl.

GASTROPOD PEARLS are rare natural pearls produced by gastropods. The Caribbean queen or pink conch (*Strombus gigas* Linne, 1758), produces a large pink pearl that, even though hardly ever round, is very rare and desirable to collectors. One of the members of the Louisiana Malacological Society had a large pink pearl of this gastropod and although not round (it was more elongated than wide) she had it mounted into a beautiful ring. I found a rare natural pearl in a *Conus striatus* Linnaeus, 1758, from Kenya. It was tear-shaped and the same color as the cone. I obtained this shell in a trade with a Kenyan collector and I received it with the animal mummified inside due to the dry conditions in Kenya. Louisiana, on the other hand, is very damp and this would have eventually caused the well-known aroma of dead mollusk to eminate from my cone. While cleaning it, before adding it to my collection, out fell this little pearl. I reported this in *Hawaiian Shell News* with pictures, but unfortunately Hurricane Katrina took the shell, the pearl, the HSN article, the picture, and negatives. [Ed. comment: see American Conchologist, vol. 37, no. 4, December 2009, p. 12, for an article on farming *Strombus gigas* for pearl production.]

So if you doubt that there are pearls in the Nevada desert, there really are, and I have some in my collection to prove it.

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Photos by the author.

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Systematic Classification of Recent and Fossil Conoidean Gastropods, by John K. Tucker and Manuel J. Tenorio, ConchBooks, 2009: a review

By Bruce Neville

Choose any shell book with a decent representation of worldwide cones. Marvel, as you flip through, at the diversity of shape, size, color, pattern, sculpture, and almost every other characteristic. The number of species in the single genus *Conus* varies depending on whom you ask, but is probably somewhere between 500 and 600 (and climbing!), making it one of the largest genera in the kingdom Animalia. Surely, these can't all belong to the same genus? There are some species that form obvious clusters—the tented cones and the needle cones stand out as two obvious groups. Once you've removed the obvious clusters, though, you're left with a huge number in the "other" category, still as diverse as when you started. This diversity is one thing that contributes to their perennial popularity with collectors. Cones have also been intensively studied by biologists, both for their ecology and for their legendary venoms. With all this attention, you'd think that a robust system of classification within the group would have been developed by now, but it has eluded all who have tried. Thus, the group has traditionally been consigned to one large genus and, indeed, a monogeneric family.

When Linnaeus inadvertently invented binominal nomenclature for zoology in 1758, he needed only a single genus for his 35 species of *Conus*. Even so, he recognized that they clustered into several groups, which he informally called *Truncati*, *Pyriformes*, *Elongati*, and *Laxi*, names without nomenclatural status. Gmelin used the same groupings, and Röding used similar ones for his cones, which for some reason he decided should be called *Cucullus*. Montfort, Swainson, Mörch, Thiele, and Iredale, among many others, have contributed subgeneric or even generic names for the variety of animals in this group. Marsh and Rippingale (1974) shoehorned the species in their monograph into the existing subgenera, with variable results. In some cases, they placed "species" now generally considered synonymous in different subgenera! Walls (1979) in his monumental *Cone Shells* abandoned any pretense of grouping within the genus and used an alphabetical arrangement for the species. A.J. da Motta (1991) proposed a comprehensive subgeneric classification for the genus based solely on shape. This classification had a number of drawbacks and was not widely accepted. Röckel, Korn, and Kohn (1995; also known as "RKK") in their unfortunately unfinished *Manual of the Living Conidae* use a non-alphabetic arrangement that obviously groups the Indo-Pacific species in some sort of order by affinity, but they avoid using formal nomenclature for these groups or even stating which species went in what "group" and why. Tucker and Tenorio are the latest to rush in where angels dare to tread. How did they succeed?

We all too often skip over the foreword—and very often the introductory material—in order to get to the "meat" of a work. In this case, Antonio Monteiro's foreword is a "must read" for anyone interested in the state of cone systematics or, in a broader context, even why we bother with such things at all. Do not skip it! The authors' introduction is a thorough analysis of the history of cone taxonomy, especially at the genus-group level, as well as a detailed explanation of the methods they used to arrive at their conclusions.

First, the authors had to define what, exactly, is a "cone." They define a cone as any neogastropod (which they strangely use incorrectly on p. 41) with an enrolled radular tooth and resorbed interior walls. This way, they have eliminated from consideration many thousands of species of turrids *sensu lato*, many of which have lately been considered part of a larger family "Conidae," but they have also brought into the fold the few species in the genera *Conorbis* Swainson 1840, *Kenyonia* Brazier 1896, and *Benthofascis* Iredale 1936, formerly considered turrids, *sensu lato*.

Next, the authors had to determine what constitutes a species within the genus *Conus*. As is well known, the taxonomy and synonymy of the group has kept armies of malacologists happily employed for over two centuries now. Tucker and Tenorio state in the introduction that they have based their species list on RKK for the Indo-Pacific, on Monteiro, Tenorio, and Poppe (2004) for the Mediterranean and West African, and on Tenorio and Monteiro (2008) for South Africa. Since there are no recent monographs for the western Atlantic or eastern Pacific species, they have relied on Abbott (1974) and Keen (1972), respectively. In all cases, these sources have been supplemented by Tucker's encyclopedic knowledge of the literature on the family.

Then, they had to determine what characters to look at. Cone radulae provide a wealth of characters, and the radulae of many more species are now known that were known just a few years ago. Thus, radulae provided a suite of 17 characters for the analysis. The authors also used 28 morphological characters and one behavioral character (diet). Each character is clearly defined in the introduction, and the various states it can assume are listed. A character-state matrix is provided for all genera in Table 3. As many fossil species as possible were also included. Obviously, only morphological characters were available for fossil species, as well as for many Recent species.

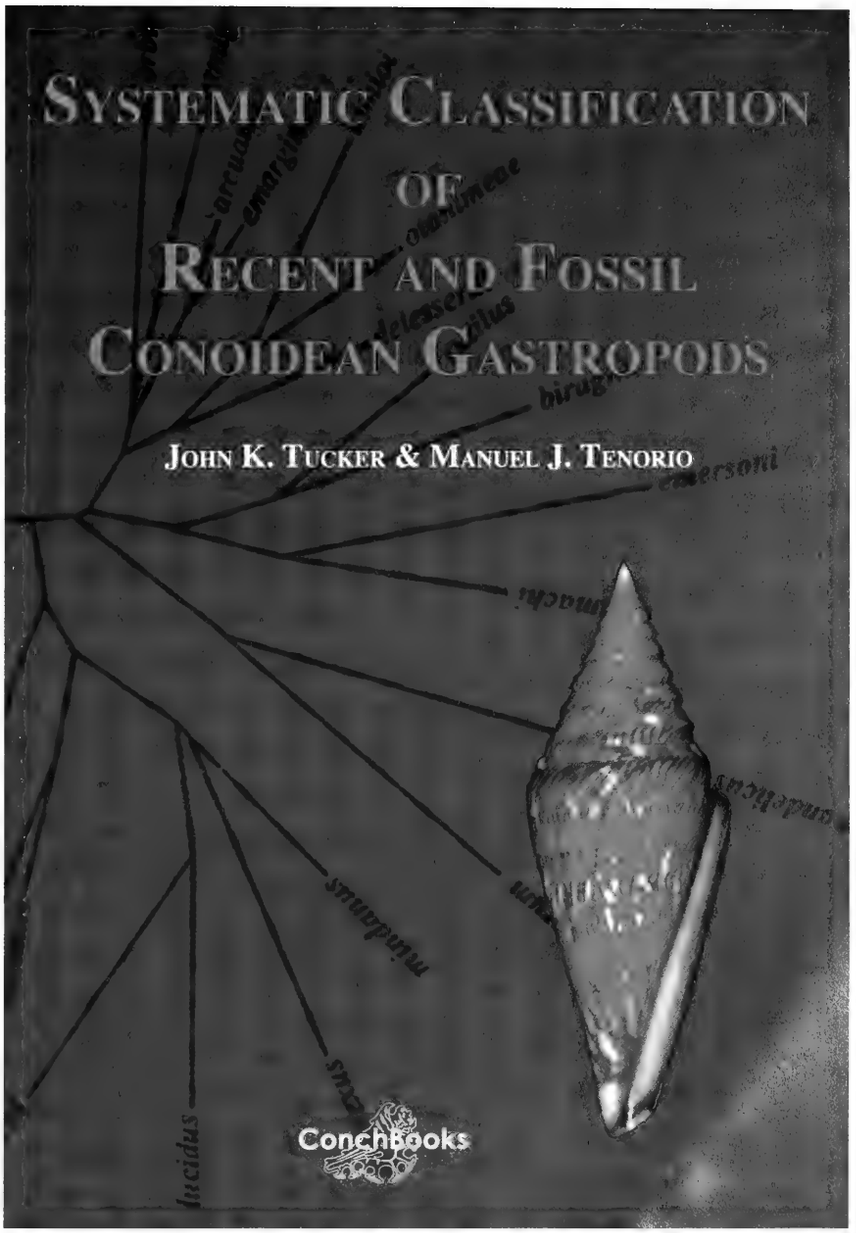
As a result of their analysis, the "cones" were divided into five families, two with two subfamilies each, and 89 genera (five of them wholly fossil). Subgenera are not used. Three of the families and 27 genera are described as new. The families are: Conidae, including Coninae (15 genera, 3 new) and Puncticuliinae (new subfamily, 49 genera, 13 new, 1 entirely fossil); Conorbidae (3 genera, 1 entirely fossil); Conilithidae (new family), including the Conilithinae (new subfamily, 18 genera, 10 new, 2 entirely fossil) and Californiconinae (new subfamily, 1 new monotypic genus); Hemiconidae (new family, 1 genus, entirely fossil); and Taranteconidae (new family, 2 monotypic genera). All but one of the new generic names (*Conasprelloides*) end in *–conus*, and all

are masculine, conveniently avoiding any changes in endings, except for the existing subgenera *Asprella* Schaufuss 1869 and *Conasprella* Thiele 1929, which are raised to genus level and require orthographic changes to the feminine ending. Along the way, in order to solidify the concept of *Conasprella*, the authors also have to clear up some longstanding legalistic nomenclatural matters regarding its type species and the names *Conus cancellatus* Hwass 1792 and *Conus pagoda* Kiener 1845.

The "meat" of the book consists of descriptions of each of the genera, alphabetically within (sub)family. Each generic description includes a citation for and black-and-white figure of the type species (color figures of each type species are provided in 11 plates at the back of the book), an outline figure of the radula (not available for one extant and extinct genera), geologic range, descriptions of the radular tooth and shell characteristics, geographic distribution, comparisons with other genera, comments, food habits, a list of congeners (living and fossil), comments on the fossil record, and (for new genera) etymology.

If you're like me, you'll head first to the list of congeners. As with any new classification, there are many placements that validate earlier ideas (thereby making the authors seem brilliant!) and more than a few that make you go "huh?!" As I suspected earlier (Neville 2008), the distinctive *Californiconus californicus* (Reeve 1844) gets not only its own genus but its own subfamily! I never really thought that *Conus lucidus* Wood 1828 belonged in *Cylinder* (as suggested by Marsh and Rippingale 1974 and others), and its placement here as *Perplexiconus lucidus* (Wood 1828) makes more sense. The distinctive South and West African species cluster together, although they are placed in 7 genera (*Africonus* Petuch 1975, *Genuanoconus* Tucker and Tenorio 2009, *Lautoconus* Monterosato 1923, *Monteiroconus* da Motta 1991, *Sciteconus* da Motta 1991, *Trovaoconus* Tucker and Tenorio 2009, and *Varioconus* da Motta 1991), all within the subfamily Puncticuliinae. The Caribbean and Australian faunas also cluster into a few geographically consistent genera.

On the other hand, there are the inevitable strange bedfellows. I was a little surprised to see *Conus proximus* Sowerby II 1860 and *Conus stercusmuscarum* Linnaeus 1758 fall with *Textilia bullatus* (Linnaeus 1758) and the others in that genus. I had always considered the (sub)genus *Asprella* as transitional to the "needle" cones, but *Conus spectrum* Linnaeus 1758, which Marsh and Rippingale considered a *Textilia,* is now *Asprella spectrum* (Linnaeus 1758). [Linnaeus capitalized "*Spectrum*," indicating a noun in apposition, so the gender does not change with the new placement.] I was more than a little surprised to see *Conus granulatus* Linnaeus 1758 and *Conus mus* Hwass 1792 fall into the same genus, *Gladioconus* Tucker and Tenorio 2009 (here erected). The "needle" cones are divided among several genera and even subfamilies, but the form is probably convergent, anyway.



Following the generic descriptions are 15 plates of line drawings of radulae, dichotomous keys using (Key 1) radular morphology and (Key 2) shell morphology alone, a 33-page bibliography, separate indexes to the genera and species, the character state matrix, and color plates of representatives of all type species. I have not tested the keys. Many 2009 works are cited in the bibliography, so it couldn't be more up-to-date. As we have become accustomed in such works, both indexes list all available names as either "valid" or a synonym.

The work is not without its problems. The phylogenies presented (Figs. 14-16) are not entirely consistent with each other, nor with the final classification presented, perhaps as a result of the many polytomies that could not be adequately resolved. Note, for instance, in Fig. 14, that *Calamiconus* Tucker and Tenorio 2009, *Pseudolilliconus* Tucker and Tenorio 2009, and *Endemoconus* Iredale 1931 (Coninae in the final classification) are surrounded by puncticuliine genera.

The combined lists of species include some significant departures from established usage, none of which is documented. I have searched in vain for "*Conus*" *gilvus* Reeve 1849 in the list of species. Whether its omission is the result of a lumping or a simple omission is not apparent. I have not seen a discussion of this species in the literature since RKK, who considered it valid. The type of *Kohniconus* Tucker and Tenorio 2009 is given as *Conus emarginatus* Reeve 1844. The illustration is strikingly like what has been called *Conus recurvus* Broderip 1833. In researching this review, I was able to determine that there is substantial justification for this change, which has been discussed in the literature (Coomans, Moolenbeek, and Wils 1986; Kohn 1992), but has certainly not caught on in the general conchological literature. Students and collectors of the cones have been waiting for a rationalization of the confusion of names in the Caribbean fauna. Tucker and Tenorio have given us one interpretation, but have not provided either literature references or original research. It was likely felt that this would add length and detract from the generic discussion, but it is an important oversight.

So, how do the authors succeed? They have created a robust classification at the generic level based on multiple characters of the whole animal. They have used a large number of species, both extant and fossil, on which to base an objective phylogeny. Their genera appear consistent and geographically reasonable. The distribution of genus sizes, in terms of included species, is what might be expected in any large family. There are monotypic genera, as might be expected, but not an inappropriately large number of them, and there are a few moderately large genera, as well. One could argue that the arrangement into multiple families, subfamilies, and genera is too divisive, or that the lack of subgenera is too simplistic, but categories at the genus-level and above are relative, and they can rise or fall in rank as the classification gets further investigated and elaborated. Will cone collectors joyfully embrace the new classification and immediately relabel their collections? Probably not, but many of us remember when "*Murex*," "*Voluta*," and "*Cypraea*" were broken up into multitudinous genera and subgenera, and we all lived through it. Is this the last word on the classification of the conoidean gastropods? No, and the authors do not pretend that it is. But now we have a rational basis for further investigations and anyone with more than a passing interest in the cones will need to have this book.

See listing on page 18 of Conidae families, subfamilies, and genera.

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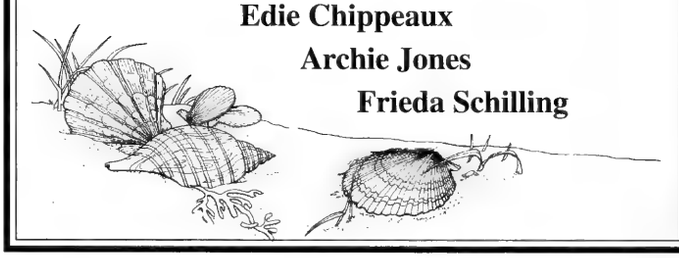
In Memoriam: (see pages 29, 30, & 31)

Jean Andrews
Edie Chippeaux
Archie Jones
Frieda Schilling



The World of Cones, according to Tucker and Tenorio (2009)

by Bruce Neville

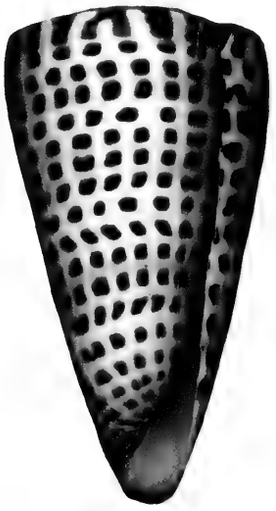
Family
Subfamily
Genus

Conidae Fleming 1822
Coninae Fleming 1822
Conus Linnaeus 1758 (type: *marmoreus* Linnaeus 1758)
Calibanus da Motta 1991 (type: *furvus* Reeve 1758)
Chelyconus Mörch 1852 (type: *ermineus* Born 1778)
Cylinder Montfort 1810 (type: *textile* Linnaeus 1758)
Darioconus Iredale 1930 (type: *omaria* Hwass 1792)
Endemoconus Iredale 1931 (type: *howelli* Iredale 1929)
Eugeniconus da Motta 1991 (type: *nobilis* Linnaeus 1758)
Gastridium Modeer 1793 (type: *geographus* Linnaeus 1758)
Leptoconus Swainson 1840 (type: *amadis* Gmelin 1791)
Nataliconus Tucker & Tenorio 2009 (type: *natalis* Sowerby II 1858)
Phasmoconus Mörch 1852 (type: *radiatus* Gmelin 1791)
Pionoconus Mörch 1852 (type: *magus* Linnaeus 1758)
Protostrioconus Tucker & Tenorio 2009 (type: *obscurus* Sowerby I 1833)
Pseudolilliconus Tucker & Tenorio 2009 (type: *boschorum* Moolenbeek & Coomans 1993)
Textilia Swainson 1840 (type: *bullatus* Linnaeus 1758)

Eugeniconus nobilis victor
(Broderip, 1842)

Puncticuliinae Tucker & Tenorio 2009
Puncticulis Swainson 1840 (type: *arenatus* Hwass 1792)
Africonus Petuch 1975 (type: *cuneolus* Reeve 1843)
Asprella Schaufuss 1869 (type: *sulcatus* Hwass 1792)
Austroconus Tucker & Tenorio 2009 (type: *cyanostoma* A. Adams 1855)
Calamiconus Tucker & Tenorio 2009 (type: *lischkeanus* Weinkauff 1875)
Conasprelloides Tucker & Tenorio 2009 (type: *cancellatus* Hwass 1792)
Dauciconus Cotton 1945 (type: *daucus* Hwass 1792)
Dendroconus Swainson 1840 (type: *betulinus* Linnaeus 1758)
Ductoconus da Motta 1991 (type: *princeps* Linnaeus 1758)
Dryaspis Iredale 1949 (type: *dorreensis* Péron 1807)
Eremiconus Tucker & Tenorio 2009 (type: *minnamurra* Garrard 1961)
Floraconus Iredale 1930 (type: *anemone* Lamarck 1810)
Fulgiconus da Motta 1991 (type: *moluccensis* Küster 1838)
Genuanoconus Tucker & Tenorio 2009 (type: *genuanus* Linnaeus 1758)
Gladioconus Tucker & Tenorio 2009 (type: *gladiator* Broderip 1833)
Gradiconus da Motta 1991 (type: *gradatus* Wood 1828)
Harmoniconus da Motta 1991 (type: *musicus* Hwass 1792)
Hermes Montfort 1810 (type: *nussatella* Linnaeus 1758)
Kalloconus da Motta 1991 (type: *pulcher* Lightfoot 1786)
Ketyconus da Motta 1991 (type: *tinianus* Hwass 1792)
Kioconus da Motta 1991 (type: *recluzianus* Bernardi 1853)
Kurodaconus Shikama & Habe 1968 (type: *stupa* Kuroda 1968)
Lamniconus da Motta 1991 (type: *clerii* Reeve 1844)
Lautoconus Monterosato 1923 (type: *ventricosus* Gmelin 1791)
Leporiconus iredale 1930 (type: *glans* Hwass 1792)
Lithoconus Mörch 1852 (type: *leopardus* Röding 1798)
Lividoconus Wils 1970 (type: *lividus* Hwass 1792)
Miliariconus Tucker & Tenorio 2009 (type: *miliaris* Hwass 1792)
Monteiroconus da Motta 1991 (type: *ambiguus* Reeve 1844)
Plagioconus Tucker & Tenorio 2009 (type: *elatus* Michelotti 1847; wholly extinct)

Dryaspis dorreensis
(Péron, 1807)



Lithoconus leopardus
(Röding, 1798)

Family
Subfamily
Genus

Plicaustraconus Moolenbeek 2008 (type: *advertex* Garrard 1961)
Protoconus da Motta 1991 (type: *cedonulli* Linnaeus 1767)
Pseudonoduloconus Tucker & Tenorio 2009 (type: *carnalis* Sowerby III 1879)
Purpuriconus da Motta 1991 (type: *cardinalis* Hwass 1792)
Pyruconus Olsson 1967 (type: *patricius* Hinds 1843)
Rhizoconus Mörch 1852 (type: *miles* Linnaeus 1758)
Rhombiconus Tucker & Tenorio 2009 (type: *imperialis* Linnaeus 1758)
Rolaniconus Tucker & Tenorio 2009 (type: *varius* Linnaeus 1758)
Sciteconus da Motta 1991 (type: *algoensis* Sowerby I 1834)
Spuriconus Petuch 2003 (type: *spurius* Gmelin 1791)
Stellaconus Tucker & Tenorio 2009 (type: *malacanus* Hwass 1792)
Stephanoconus Mörch 1852 (type: *regius* Gmelin 1792)
Strategoconus da Motta 1991 (type: *generalis* Linnaeus 1767)
Trovaoconus Tucker & Tenorio 2009 (type: *venulatus* Hwass 1792)
Turriconus Shikama & Habe 1968 (type: *excelsus* Sowerby III 1908)
Varioconus da Motta 1991 (type: *bulbus* Reeve 1843)
Virgiconus Cotton 1945 (type: *virgo* Linnaeus 1758)
Virroconus Iredale 1930 (type: *ebraeus* Linnaeus 1758)
Vituliconus da Motta 1991 (type: *planorbis* Born 1778)

Conorbiidae Powell 1942
Conorbis Swainson 1840 (type: *dormitor* Solander 1766; wholly extinct)
Artemidiconus da Motta (type: *selenae* von Mol, Tursch & Kempf 1967)
Benthofascis Iredale 1936 (type: *biconica* Hedley 1903)

Conilithidae Tucker & Tenorio 2009
Conilithinae Tucker & Tenorio 2009
Conilithes Swainson 1840 (type: *antidiluvianus* Bruguière 1792; wholly extinct)
Bathyconus Tucker & Tenorio 2009 (type: *orbignyi* Audouin 1831)
Conasprella Thiele 1929 (type: *pagoda* Kiener 1845)
Dalliconus Tucker & Tenorio 2009 (type: *mcgintyi* Pilsbry 1955)
Eoconus Tucker & Tenorio 2009 (type: *sauridens* Conrad 1833; wholly extinct)
Fusiconus da Motta 1991 (type: *longurionis* Kiener 1850)
Globiconus Tucker & Tenorio 2009 (type: *tornatus* Sowerby I 1833)
Jaspidiconus Petuch 2003 (type: *jaspideus* Gmelin 1791)
Kohniconus Tucker & Tenorio 2009 (type: *emarginatus* Reeve 1844)
Lilliconus Raybaudi Massilia 1994 (type: *biraghii* Raybaudi Massilia 1992)
Parviconus Cotton & Godfrey 1932 (type: *rutilus* Menke 1843)
Perplexiconus Tucker & Tenorio 2009 (type: *perplexus* Sowerby II 1857)
Profundiconus Kuroda 1956 (type: *profundorum* Kuroda 1956)
Pseudoconorbis Tucker & Tenorio 2009 (type: *coromandelicus* E.A. Smith 1894)
Quasiconus Tucker & Tenorio 2009 (type: *melvilli* Sowerby III 1879)
Viminiconus Tucker & Tenorio 2009 (type: *vimineus* Reeve 1849)
Ximeniconus Emerson & Old 1962 (type: *ximenes* Gray 1839)
Yeddoconus Tucker & Tenorio 2009 (type: *sieboldii* Reeve 1848)
Californiconinae Tucker & Tenorio 2009
Californiconus Tucker & Tenorio (type: *californicus* Reeve 1844)

Hemiconidae Tucker & Tenorio 2009
Hemiconus Cossmann 1889 (type: stromboides Lamarck 1803; wholly extinct)

Taranteconidae Tucker & Tenorio 2009
Taranteconus Azuma 1972 (type: *chiangi* Azuma 1972)
Kenyonia Brazier 1896 (type: *pulcherrima* Brazier 1896)

***Protoconus cedonulli* (Linnaeus, 1767)**

***Profundiconus profundorum* (Kuroda, 1956)**

***Californiconus californicus* (Reeve 1844)**

Astronaut Trail Shell Club holds 30th Space Coast Seashell Festival

by Bobbi Cordy

Astronaut Trail Shell Club

The Astronaut Trail Shell Club (email: corshell@cfl.rr.com) held their 30th Space Coast Seashell Festival on 16-17 January 2010. The theme for this year's shell show was "Pearly Shells." The theme was carried out in decorations and in entry categories for the festival.

The Astronaut Trail Shell Club was founded in 1966 and uses the proceeds from the annual shell show to fund research grants. Because of poor attendance during the 2009 event, an extra push was made for publicity this year. Almost all of the members were involved in one way or another in promoting this year's event, where we had 25 dealers and 47 exhibitors. It was quite a crowd as we all gathered for doughnuts and coffee prior to the set up on Friday morning, waiting to see if the hard work getting the word out would pay off with increased attendance.

Our esteemed judges this year were: Richard Goldberg, an avid dealer and collector from Maryland; Dr. Gustav Paulay, Curator of Marine Malacology at the University of Florida Natural History Museum; Phyllis Gray, an active club member and shell crafter from the Central Florida Shell Club; and Brenda Brand who has traveled extensively throughout the Atlantic and Caribbean areas in search of exotic specimen mollusks. These four spent the afternoon pouring over the beautiful and well-done exhibits.

On Friday evening a banquet was held at the local NCO Club with entrees of salmon and prime rib. The tables were decorated with oysters and pearls laid creatively on round mirrors. The judges and 15 committee members were introduced to an appreciative crowd. A program on pearl culture was presented by Nancy Gavrish. Nancy and her husband Bob have been in the pearl business for several years and usually participate as one of the dealers at the festival.

Award Winners were announced as follows:

COA Trophy: Gene Everson, "Shells of Masirah"
DuPont Trophy: Alan Gettleman, "Freshwater Mussels"
Master's Trophy: Martin Tremor, "Trumpets & Tritons"
R. Tucker Abbott Award: James and Bobbi Cordy, "Self-Collected Shells of Eleuthera"
Fossil Award: Carolyn Petrikin
Junior Award Scientific: Brooke Kyle "Winning Shells"
Astronaut Trail Shell Club Arts and Crafts Trophy: Carolen Roger Bailey "A Forest of Pearly Shell Trees"
Astronaut Trail Shell Club Collectible and Antique trophy: Eleanor Hillman
Junior Award Artistic: Melissa Linn

Shell of the Show: *Muricopsis testorii* Houart & Gori, 2008, Gene Everson
Shell of the Show, Self Collected Worldwide: *Megalonais nervosus* (Rafinesque, 1820), Alan Gettleman
Shell of the Show, Self Collected, Florida: *Turritella exoleta* (Linnaeus, 1758), Gene Everson

Judges Rosettes:

Dr. Harry Lee - Sinistral Shells
Gene Everson – Turritellas
Pat Linn – Shell Wreath
Linda Koestel – Shell Quilt

The exhibit hall prior to filling up with people interested in shells, shell collecting, and pearls.

R. Tucker Abbott Award was won by James and Bobbi Cordy with a display titled, "Self-Collected Shells of Eleuthera." This beautiful island is a favorite spot.

The Master's Trophy was won by Martin Tremor (left) for a display titled "Trumpets & Tritons." The Fossil Award went to Carolyn Petrikin (center) and Pat Linn (right) recieved a judges rosette for her shell wreath.

On Saturday the doors were opened to the public from 9a.m. to 5p.m. A special KIDS KORNER was available for the children with craft work, hands on shells, and a dice game with stuffed sea-related toys as prizes. It was a busy area and fun for all. Hourly door prizes were given of shells and shell-related items donated by participating dealers.

A Sand-Flea Market headed up by Doris Underwood and Eleanor Hillman had over 10 tables of bargains. Some of these items were on consignment with 20% going to the club. There were shoppers around these tables all day.

Following the busy day we gathered at the home of B.J. and Larry Shouppe on the Indian River. A place to relax, kick off your shoes, and enjoy the wraps, meatballs, dips, and BYOB. A program on collecting in Jamaica for land snails was presented by Rich Goldberg.

Sunday was another full day with heavy attendance. At 4p.m. most of the members gathered to roll up the tablecloths, take down peg boards, and transport supplies to the storage shed. It was a great show this year, with plenty of workers, attendees, and profits sufficient to once again fund a couple of scholarships for graduate students in marine sciences at the Florida State University.

Bobbi Cordy
Show Chairman
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North Carolina Shell Show - 25-27 September 2009

The North Carolina Shell Club (contact email: jhtysor@aol.com) held its annual shell show at the Cape Fear Museum of History and Science in Wilmington, North Carolina, on 25-27 September 2009. This event allows the club to interface with the public and share their love of shells as well as providing a judged shell show for club members. Judges this year were Dr. Jose Leal and Dr. Art Bogen. They really had a tough task in judging the various displays as they were particularly well done this year.

This year's winners were:

DuPont Trophy: Ed Shuller and Jeannette Tysor with a display titled "Staying Alive"
Hugh Porter Award: Vicky Wall with a display titled "Self-collected Shells of North Carolina"
Dean & Dottie Environmental Awareness Award: Ed Shuller and Jeannette Tysor with "Staying Alive"
Best Shell of Show: Ron Hill with a *Morum brunnii* Powell, 1958
Best Self-collected Shell: Ed Shuller with a *Pterynotus pinniger* (Broderip, 1833)

Right: Vicky Wall, North Carolina Shell Show winner of the COA Award for a 26 foot display showing different methods to collect shells (e.g. beachcombing, SCUBA, fossiling, trading, etc.). Her exhibit was titled "There's More Than One Way to Collect a Shell."

Snails and Coal Mining

by Tom Eichhorst

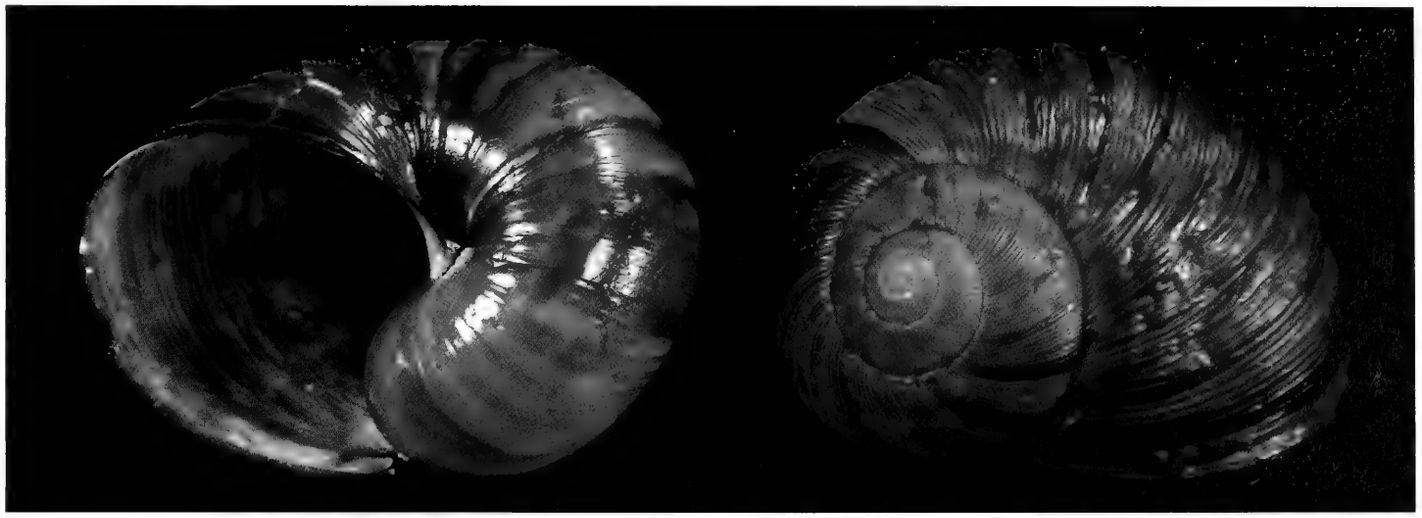
A few years ago I was sent a copy of a short article about a battle in New Zealand, between a state-owned power company and an environmental group. The issue at stake was the proposed coal mining of an area along the west coast of New Zealand's South Island. Specifically, the mining was planned to take place on Mount Augustus. The first clash between the environmentalists and the mining company over this particular issue seems to have come in 2004. The reason this was deemed to be of interest to me was that various environmentalist groups claimed the proposed strip mining would destroy the restricted habitat of a then un-named land snail. I have since misplaced the original article, but the story was easy enough to follow using various search engines on the Internet, which I did. On one side was the push for cheap energy and on the other side a concern for a pristine environment and the preservation of an endemic snail. The energy company was eventually granted permission to mine the area and to remove and relocate the snails, now named *Powelliphanta augustus* Walker, 2008. The status of resultant captive breeding programs and relocation efforts are still uncertain, but the fight continues as other habitats and other as yet un-named snails are brought under similar pressure.

***Powelliphanta augustus* Walker, 2008 is a recently described species of predatory land snail from Mt. Augustus on the South Island of New Zealand. The species has been relocated and is the subject of captive breeding programs to try and ensure its survival after its mountain ridge habitat was opened for strip mining coal. Like most of New Zealand's 1,000 snail species, *Powelliphanta augustus* is endemic. Photo by Alan Liefting as displayed on Wikipedia.com.**

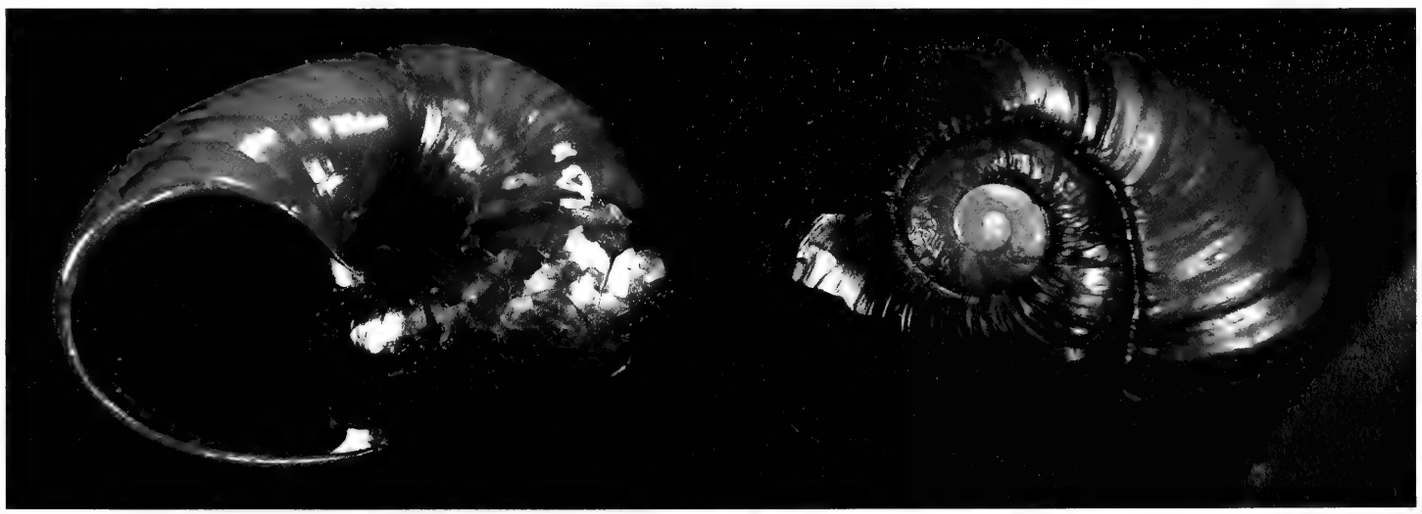
Despite the title, the purpose of this article is not to report on environmental issues in New Zealand, but rather to discuss the fascinating group of snails this issue highlighted. The genus *Powelliphanta* was erected by A.C. O'Connor in 1945 as a subgenus of *Paryphanta* Albers, 1850. It was named after Arthur William Baden Powell, a New Zealand naturalist who studied mollusks and named most of the *Powelliphanta* (at the time considered *Paryphanta*). *Powelliphanta* is now accorded generic status and contains all but two of the species formerly within *Paryphanta*. Left in the original genus are *Paryphanta busbyi* (Gray, 1840) (the type species, confined to the North Auckland Peninsula) and *Paryphanta watti* Powell, 1946. *Powelliphanta* contains somewhere between 9 and 20 named species (depending upon which author you read) and more than twice that number of subspecies (plus a large number of as yet un-named species). Both of these genera are in the family Rhytididae, a family of predatory air-breathing land snails of South Africa, the South Pacific (particularly New Caledonia and Papua New Guinea), Australia, and New Zealand. There are about 27 genera within the family with hundreds of named species. Seven genera are endemic to New Zealand where they have adapted to a colder climate and higher elevations.

Both *Paryphanta* and *Powelliphanta* are large (30-90mm) predatory nocturnal snails that actively hunt earthworms, slugs, and other prey. The common names for these snails are kauri or amber snails (after an ancient group of large long-lived evergreen trees of the genus *Agathis* with broad leathery leaves, white close-grained wood, and in fossil specimens a resin used in varnishes and enamels). These snails are hermaphroditic and slow to mature, not

Below: *Powelliphanta hochstetteri* (Pfeiffer, 1862), 55mm, collected in Nelson Province, South Island, New Zealand, in the late 1940s. This shell was allowed to dry (even though kept in the fairly humid climate of Cape Cod) and has shattered beyond repair.



Above: *Natalina caffra* (Férrusac, 1821), 49mm, in loose soil, New Brighton, Port Elizabeth, South Africa, collected in the 1950s. This species was briefly considered as a solution to the infestation of *Achatina fulica* Bowdich, 1822 (the giant African snail) in Hawaii. Only a few specimens were imported for testing and none were released.
Below: *Paryphanta busbyi* (Gray, 1840), 64mm, among low vegetation, North Auckland, New Zealand, collected in the late 1940s. Although now well oiled, the shell had been allowed to partially dry and the resultant breakage is evident.



reaching reproductive age until about 5 years and living an average of 15 years, but occasionaly exceeding a 20-year life span. Despite their large size and attractive coloration (many are patterned in stripes of brown, red, yellow, or black), they are not commonly found in collections for three reasons. First, many of the species have become endangered because their restricted habitats (small pockets of thick moisture-laden bush) have been disrupted by human development and because they have become prey for introduced species, such as rats (*Rattus rattus* and *Rattus norvegicus*) and the common brushtail possum (*Trichosurus vulpecula*). This leads to the second reason you will not find them in collections, they have been protected by New Zealand's Wildlife Act since its passage in 1953 (with some additional protective laws enacted in the 1990s). So if you want one, it will have to come from an old collection. The third reason they are seldom seen in collections is that many specimens self-destruct if not kept properly. Most of these snails have a periostracum that is as thick or thicker than the calcium portion of their very thinly-walled shells. As the shell dries, the constricting periostracum will cause the thin calcium portion of the shell to crack and often shatter completely. There are, in fact, many of these shells in collections that have not cracked or shattered, even though they have been allowed to dry out. On the other hand, I have seen many examples that are now worthless specimens that cannot be glued back together because the shell was deformed (and then broken into pieces) by the drying periostracum.

Specimens of other genera within Rhytididae are regularly available from Africa and very occasionally from other localities. If you are lucky enough to obtain such a specimen, please consider treating it a bit differently from your other land snails. It has a thin light-weight shell that is easily chipped and broken. If it is in a dried condition, then that shell may be under some pressure from the dried periostracum, so again, treat it gently. If it has been heavily oiled and is not in a dried condition, then keep it that way. My *Paryphanta busbyi* specimen is kept in a plastic air tight container and sits on cotton wadding that is oil saturated (mineral oil). I also coat the shell in oil periodically.

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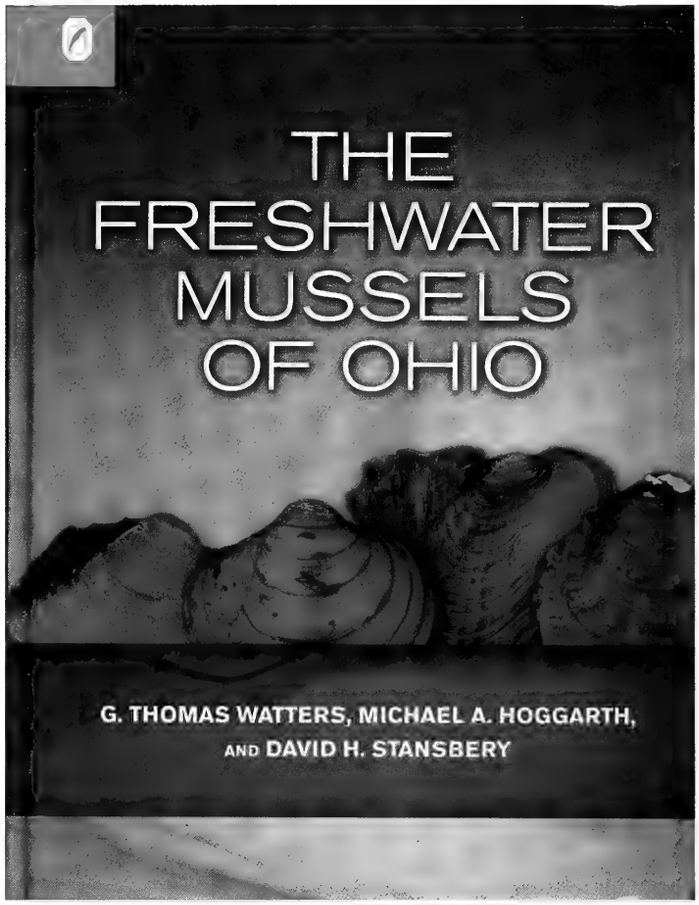
The Freshwater Mussels of Ohio

by G. Thomas Watters, Michael A. Hoggarth, & David H. Stansbery, 2009 The Ohio State University Press, Columbus, Ohio, ISBN 978-0-8142-1105-2, pp. 421



For those lucky enough to share an interest in freshwater mussels, this book is a dream come true. Ohio is a state particularly rich in freshwater mussels. Fully 80 species are found in Ohio waters, some 27% of all species known in North America (about 300 species, depending upon who is counting). To add a sobering fact to this seeming richness, it should be pointed out that over half (54% according to the authors) of these are either extinct or endangered. Sadly, this is a pattern repeated throughout the United States. An additional sobering fact is that all of Ohio's mussels (even invasive species that are not true mussels, such as the zebra mussel (*Dreissena polymorpha* (Pallas, 1771)), the quagga mussel (*Dreissena bugensis* Andrusov, 1897), and the Asian clam (*Corbicula fluminea* (Müller, 1774))) are fully protected and cannot be collected, alive or dead, without a scientific permit.

So how is a book on shells you cannot legally collect a dream come true? For several reasons actually. First, freshwater mussels are a fascinating study. Their methods of reproduction are varied, unique, and would be beyond belief if they had not been reliably investigated and documented. If you are unfamiliar with the various ways freshwater mussels reproduce, read this section carefully before digging through the species descriptions as it will be an aid in understanding each individual species. It is also simply a fascinating topic and the authors provide excellent photographs and illustrations to help the reader understand the different reproductive strategies found among these often bizarre creatures. Second, there are some of these same species found in other states where they are not endangered and can be collected (although the numbers of species and available states keep dwindling). Third, shells from old collections are often available and this book will not only firmly identify these shells, but will list the synonyms (helpful with older collections), give the range (total and for Ohio), present a thorough natural history (including reproductive methodology and potential host fish), and present the etymology of each name. The book includes a species key that takes some user familiarity with shell characters (all explained in a glossary in the book), but refers back to individual species descriptions and illustrations as a check on identification. When you get to the species entry, you find a detailed description and usually several examples to show possible shell variation. Finally, the authors have truly met a need for those of us who have freshwater mussel collections by filling in a missing reference. Short of collecting a myriad of research papers, two-century-old books by such greats as Isaac Lea (1792-1886), Thomas Say (1787-1834), Timothy Abbot Conrad (1803-1877), and Constantine Samuel Rafinesque-Schmaltz (1783-1840), and obscure area studies, there are just a few readily available "shell books" on freshwater mussels. The *Field Guide to Freshwater Mussels of the Midwest* by Kevin S. Cummings and Christine A. Mayer (1992) is an excellent guide but a bit limited with most species shown with just a single color photo. There is also *The Freshwater Mussels of Tennessee* by Paul W. Parmalee and Arthur E. Bogan, a complete and well-illustrated volume. For studies further south we have *Freshwater Mussels of Alabama & the Mobile Basin in Georgia, Mississippi, and Tennessee* by James D. Williams, Arthur E. Bogan, and Jeffrey T. Garner (2008), another complete and thorough study of the mussels found in the subject area. These, combined with the present volume will present a basic library of freshwater mussels, needing only a few specialist area studies to complete.

As must be evident, I believe this to be a "must have" book for anyone interested in freshwater mussels. The color plates alone are worth the price. I was able to clear up several questionable identifications in my collection because of the shell color, pattern, and structure variations shown for each species. There are even numerous glochidia illustrated. No help for identification, but interesting none-the-less. I do not have any negatives to report about this book. The closest to that would be the empty feeling you get when reading the description of a species like *Epioblasma lewisi* (Walker, 1910). This interesting mussel with the lobed shell is one of the extinct species. Protective laws that prevent collecting will not stop this trend. To do that the different states will have to look toward water quality, in terms of both pollutants and manmade alterations such as dams, channels, and dredging. The authors point out the necessity of habitat protection and restoration.

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Shellebration Boston!

By Warren Graff, Boston Malacological Club

Join in the celebration of the Conchologists of America 2010 Convention in Historic Boston, Massachusetts, and help observe the 100th year of the Boston Malacological Club. Convention dates are August 27th through August 31st, with pre-convention tours August 26th and 27th.

The host hotel is the Boston Park Plaza, located in the heart of downtown Boston. Minutes from Logan International Airport, the hotel is also close to many of Boston's finest attractions. The Boston Park Plaza has 941 recently renovated rooms, five in-house restaurants, and many other amenities. It is the most affordable venue for downtown Boston. Reservations can be made by calling (617) 426-2000 or (800) 225-2008, or use the website **http://www.starwoodmeeting.com/Book/cac0826.** You must mention COA to receive the convention rate, which will be honored 3 days prior and 3 days after the convention dates. The special website address is to reserve the regular state rooms. If suites or some other type of room is desired, use the hotel's regular website address: http://www.bostonparkplaza.com.

NOTE: Due to economic conditions and other factors, the Boston Park Plaza has reduced the convention rate of the hotel stateroom to $169 plus 14% tax, a savings of $30 from the original rate of $199 per night. In addition, the entire room block has been upgraded to deluxe guestrooms with complimentary internet access. Also, COA officers and your Boston-based club request that you make reservations by using the Boston Park Plaza hotel contact information (phone number or special link) and NOT use travel sites such as Expedia or Travelocity. In order to be financially feasible, as in all COA conventions, COA must meet certain contract-related goals with the hotel, and booking through outside sources does not give credit to COA toward meeting these goals.

Logan Airport is about six miles from the hotel and the trip costs approximately $25-$35 by taxi. There is no hotel shuttle, but independent shuttles cost $14 per person and are available by calling the Park Plaza concierge service. Note: as in other cities in the northeast corridor, parking is expensive in Boston and is typically at least $20 or more for 24 hours. The Park Plaza does not have its own lot, but there are several private lots nearby; see the registration insert for details on parking options. **Special temporary parking arrangements will be made for bourse dealers for loading/unloading at the setup and take down times.** For those of you planning to drive, directions to Boston and the hotel are provided in the registration form on the COA 2010 link.

The convention schedule will start with pre-convention tours on Thursday, August 26th and continue with a.m. tours Friday, August 27th; see details on these tours below. Registration will begin Friday morning, and the convention opening will be at 1 p.m., with the Welcoming Party Friday evening. Registration will continue Saturday, August 28th and the COA annual meeting will be held in the afternoon with the oral auction that evening. Sunday, August 29th and Monday, August 30th will consist primarily of programs; dealers' bourse setup will be Monday in the morning, with the bourse opening at 1 p.m. that afternoon. The bourse will conclude Tuesday morning August 31st and the farewell banquet will be held that evening. Silent auctions, raffles, and door prizes will be conducted daily as in the past and the detailed schedules for these will be available in your registration packets.

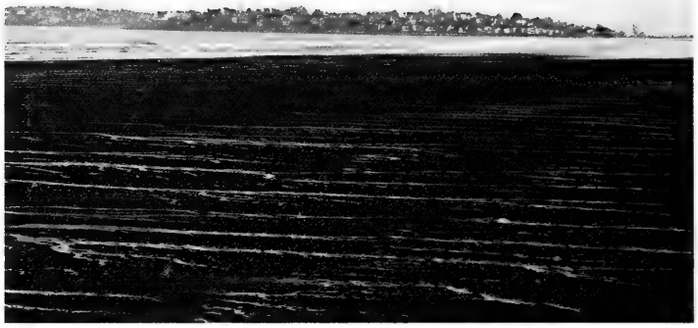
Come early to enjoy three field trips on Thursday and two on Friday morning before the official convention opening ceremony.

Field trips planned for Thursday August 26th; see the registration form on the COA 2010 link for details on departure times, duration, and cost.

Historic Concord, Mass. Tour the location of the start of the American Revolution. Located 16 miles west of Boston, Concord was home to Ralph Waldo Emerson, Henry David Thoreau, and Louisa May Alcott. The tour will comprise visits to the Old North Bridge, the Alcott House, the Concord Museum, and the Concord Library, which houses an exhibit of the Shells of Concord, collected by Boston Malacological Club member Kristina Joyce. Through careful planning and preservation efforts, much of Concord still looks as it did in revolutionary times.

Harvard Museum of Natural History, Cambridge, Mass. Tour the fabulous collections, including the Mollusk Department, Mineral Exhibit (deemed one of the best in America), the Great Hall of Mammals, and the famous exhibit of Glass Flowers (more formally known as The Ware Collection of Blaschka Glass Models of Plants, this display really has to be seen to be believed).

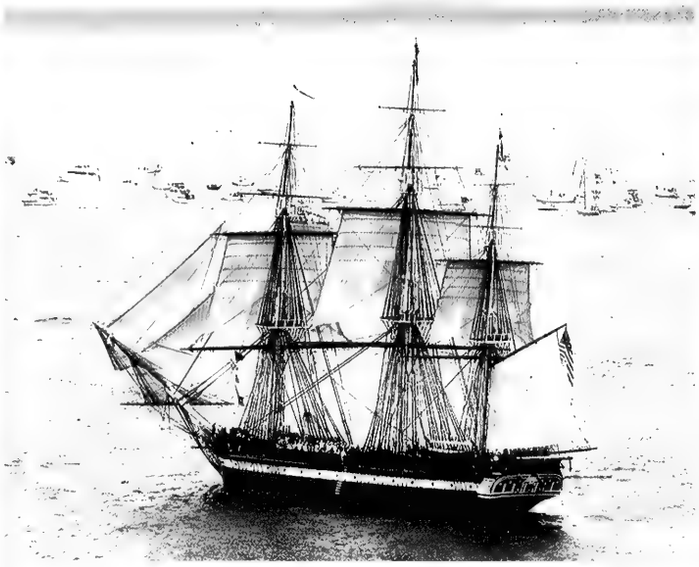
Shelling Trip – Although not as bountiful as a Florida mud flat, shelling can be productive on the beautiful east coast beaches of



Massachusetts, particularly north of Boston. The trip is planned for either or both of two such locations, Nahant Beach in Lynn, and Revere Beach. Several of our New England shell experts from the Boston club will host this trip. A stop at the famous Kelly's Restaurant, a Revere Beach staple since 1951, is planned for lunch.

Field Trips scheduled for Friday morning August 27th include the Boston Duck Tour and the USS Constitution and museum. See the registration form on the COA 2010 link for details on departure times, duration, and cost. Both tours will return in time to get lunch and make the convention opening ceremony.

Boston Duck Tour – A great way to see many of Boston's famous sites and places, the Boston Duck Tour is in W.W.II style amphibious landing vehicles. The tour takes about 90 minutes and includes a tour guide and a short water excursion providing a wonderful skyline view of the city. You will see the Boston Public Garden, Massachusetts State House and Beacon Hill, the Old State House, Faneuil Hall and Quincy Market, Bunker Hill Memorial, and the USS Constitution to name a few. Take a virtual tour from this link below, and crank up the volume! http://www.bostonducktours.com/tour_video.html



USS Constitution and Museum – You will go aboard the oldest commissioned warship in the world. A veteran of the War of 1812, this maritime treasure has been restored to its original splendor. The two hour tour also includes a visit to the USS Constitution Museum; the ship and the museum are located in the Charlestown Naval Yard.

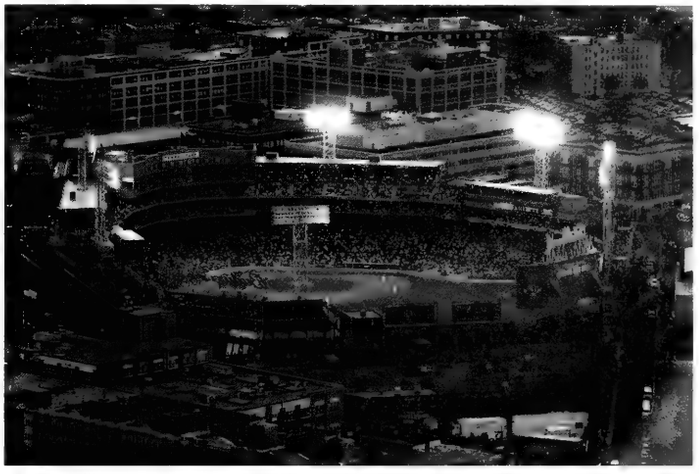
Other things to take in – There are many other worthwhile places and things to see in Boston. There was not enough time to schedule all of these as field trips, so for those coming early or staying later, here is a list that we recommend for you to do on your own.

Boston Public Garden – Only two blocks from the hotel, this beautiful and serene area is an oasis within the city. Don't forget to take a ride on the famous Swan Boats.

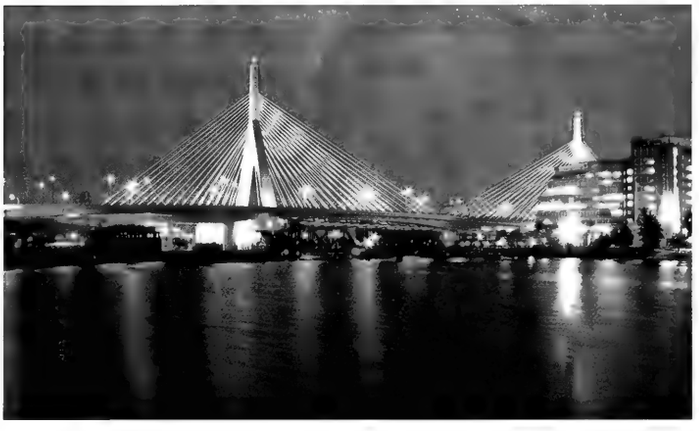
JFK Library and Museum – Located in Dorchester, a Boston neighborhood, the JFK Library houses the papers and memorabilia of our 35th president.

Top of the Pru and the Hancock Towers – Spectacular views of Boston and Cambridge can be seen from the top of both of these

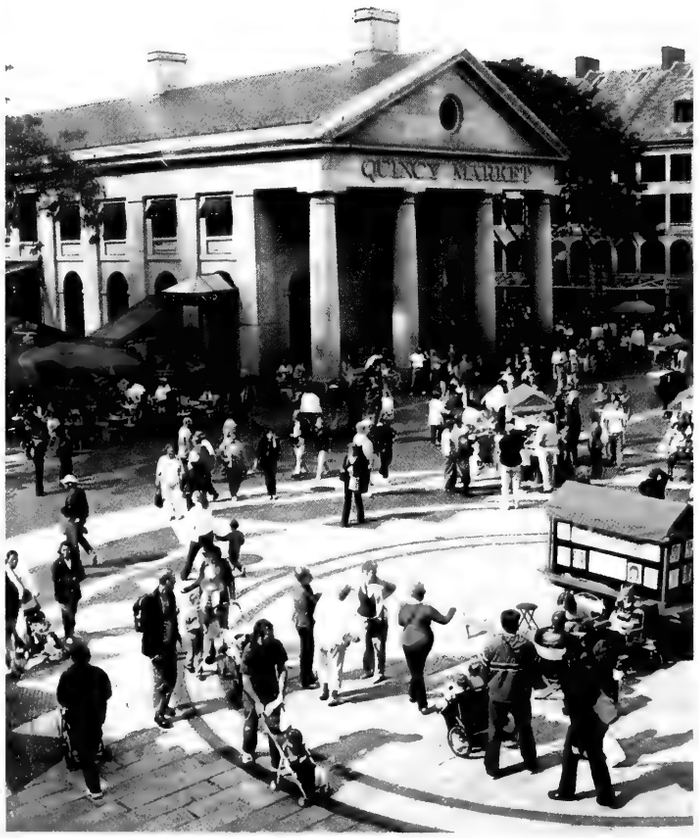
famous landmarks located just a few blocks from the hotel in Back Bay. The Prudential has an excellent restaurant, 'Top of the Hub.'



Other interesting places include a tour of **Fenway Park**, home of the Boston Red Sox, the **Paul Revere House** in Boston's North End, the graceful Zakim Bridge, and the **New England Aquarium** on Boston's waterfront. The Park Plaza concierge can help arrange transportation to these venues.



Faneuil Hall (above)/Quincy Market complex (below) – A short taxi ride from the hotel and close to the waterfront, this is the most visited tourist site in Boston. Originally a marketplace, these historic buildings were beautifully restored in the 1970's and house a myriad of restaurants, stores, and tourist item vendors. The Faneuil Hall auditorium was used in the first protests against taxation and is still in use today.



Call for Programs

If you would like to provide one of the programs to be scheduled for the 2010 convention in Boston, please submit your name, program title, and a synopsis of the content and send to Warren Graff at lowhurdler@gmail.com or 18 Noyes Lane, Merrimac, MA 01860. As in the past, they should be approximately 30 minutes in length.

Donations

Please donate shells and shell-related items that can be used for raffle items, silent auctions, or door prizes, as well as specimen-grade shells for the oral auction. Shell donations should include pertinent data (name and locality). Donations are tax deductible and help support COA grants and research. Financial donations are accepted as well and help offset the expense of awards and other convention necessities.

Categories for Financial donations are:

Argentum	$10-$99
Aurantium	$100-$199
Diamantine	$200+

In order to be listed in the 2010 COA program booklet, donations must be postmarked no later than July 10th, 2010. All shell-related donations should be sent to Don Robak, 6 John St., Chelsea, MA 02150. Financial donations should be sent to Warren Graff, 18 Noyes Lane, Merrimac, MA 01860. **COA APPRECIATES YOUR SUPPORT!**

Jean Andrews

(1923 -- 7 January 2010)

Jean Andrews, known to many as the "Pepper Lady," but renowned in the shelling community for her expansive knowledge of Texas sea shells.

Sadly, Jean Andrews, known as "Dr. Jean" at the University of Texas (where she was a distinguished alumna) and as the "Pepper Lady" in the popular press, has passed away. Born in Kingsville, Texas, she graduated from both the University of Texas and Texas A&M University, and in 1976 earned her doctorate at the University of North Texas.

Jean was a world traveler. Her visits to such sites as China, Pakistan, India, Ethiopia, Saudi Arabia, and Iran altered a bit when she began collecting shells and learned to SCUBA dive. Her world travel destinations changed to such places as the Philippines, the Great Barrier Reef, the Red Sea, the Canary Islands, and Panama. She had a piercingly sharp intellect and a curiosity about the world around her that could only be satisfied with in-depth knowledge. Her interest in shells led to her publication of "Sea Shells of the Texas Coast" (1971) and "Shells and Shores of Texas" (1977). These books (and later field guide versions) were the standard for shell collecting along the Texas coast for over three decades and covered all 3,300 waterfront miles (373 linear miles) of the Texas coast, listing specifics of where each species could be found.

Jean was also fascinated by botany, especially peppers. Just as her interest in sea shells evolved into study, expertise, and authorship, her interest in peppers became a research and investigative effort as she studied the world of peppers that was until that time relatively unknown. She became THE expert and published two books on the subject: "Peppers: The Domesticated Capsicums" (1984, 1995) and "The Pepper Trail: History and Recipes From Around the World" (1999). She also illustrated each plant for the books. "Peppers: The Domesticated Capsicums" had 32 hand-painted color plates painted by Jean. The paintings took quite a few years and were done from living plants she raised. "The Pepper Lady" became quite well-known for her knowledge of peppers and how to properly incorporate them into any number of great recipes. Books on shells and books on peppers normally have a limited audience, but Jean's books sold over 40,000 copies. A tribute to her passion and skill.

Theresa May, director of the University of Texas Press has been quoted as saying about Jean, "She was colorful — oh my goodness she was colorful." Another quote about her typified Jean as "fiery and humorous." (Austin 360.com)

Not as well known as her work with sea shells and peppers, Jean also established a cooperative venture in Costa Rica for women to create and export hand-sewn fabrics. She had seen how skilled the village women were and decided she could help them turn that skill into a profit and a chance at an improved life. At the University of Texas she was instrumental in establishing the Women's Studies program begun in 1979.

Student, scientist, world traveler, SCUBA diver, gardener, artist, author, entrepreneur, and cook- this was a multi-talented lady who was also a fascinating conversationalist. Jean was a gracious hostess and there are many who will fondly remember a visit to her home in Austin for dinner, lively discussion, and the chance to marvel at the exotic natural history objects and art that filled her house. She will certainly be missed.

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Archie L. Jones

(4 September 1910 -- 15 February 2010)

Archie Jones, a legend in the conchological world, has passed away at the age of 99. He called himself a "sheller," finding both "conchologist" and "malacologist" a bit pretentious. This understated humor was well known to all acquaintances of this soft-spoken and unfailingly polite "sheller."

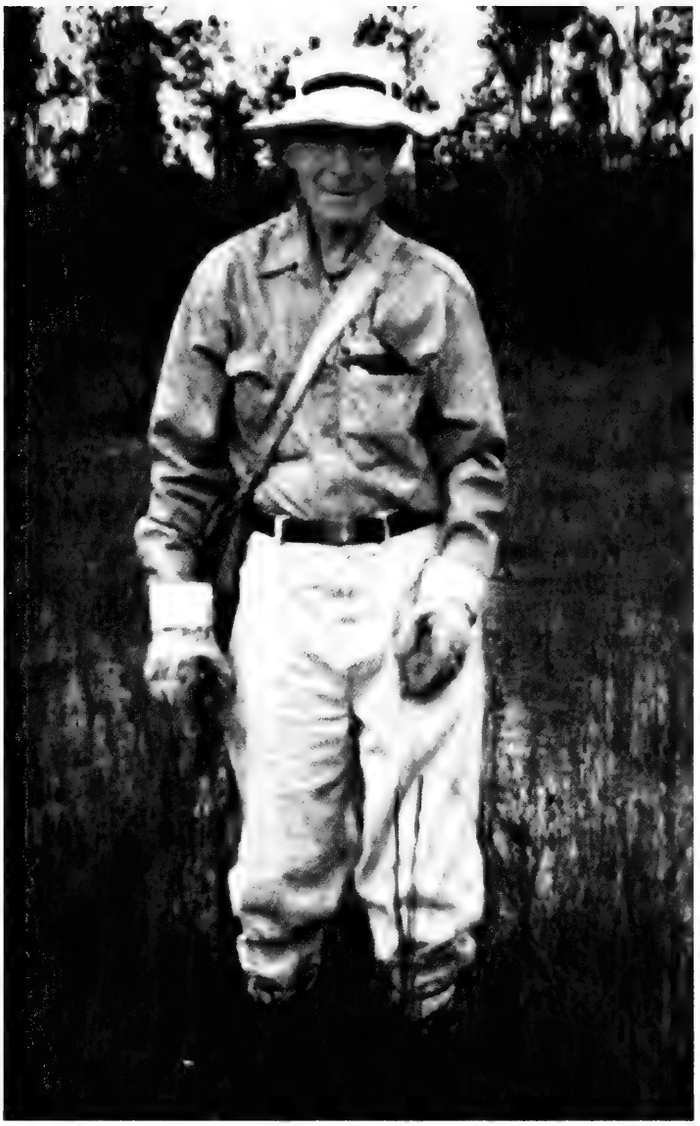
Archie was born in Palatka, Florida, and lost both of his parents to drowning accidents when he was still quite young. This stressful situation eventually led to his quitting school after the 10th grade to find a job and support his family. While his formal education may have ended early, he was far from uneducated and continued an informal education by becoming an avid reader of biology, malacology, philosophy, history, etc. Archie remained in Florida, working at a variety of jobs, until 1938 when he and his wife, Margarate, moved to California. He enlisted in the U.S. Army and served in World War II and after the war as an accountant. After he left the service, he held a similar position for Crandon Wholesale Drug Company and eventually became an executive for this same company, a position he held until his retirement. It was at this time he and Margarate moved back to Miami. She died in 2000.

Archie got hooked on *Liguus fasciatus* (Müller, 1774), or Florida tree snails, while on a tropical fish hunting expedition near Pinecrest, Florida. At the time, Pinecrest was little more than a U.S. Post Office. He spotted a *Liguus* in a tree and his fascination with this colorful group of tree snails began. Braving snakes, heat, swamps, alligators, and mosquitoes, he trekked through the Florida wilds investigating isolated hammocks in search of the many forms of *Liguus fasciatus*.

Archie realized early on that encroaching human development would mean the end of much of the habitat these snails relied upon. In 1957, he and a couple of friends began transplanting snails from endangered areas to protected habitats, such as Everglades National Park. These colonies flourished and are now often the only surviving remnants of earlier populations.

Alan Gettleman related on Conch-L, "At the 1986 COA convention in Ft. Lauderdale, I commented to Archie Jones upon one of his shells I obtained at the convention, *Liguus septentrionalis*, a gorgeous white shell with parallel green lines on the whorl. The convention site was ½ mile east of the sprawling Galleria shopping mall. Archie related the location he collected that shell was Big Hammock, ½ mile west of where we were. He told me the hammock was leveled to build the mall and the shell's habitat totally destroyed. I am happy Archie was able to collect and preserve the shell. Habitat destruction is forever."

Archie was an acknowledged expert on Florida's tree snails, as well as other land snail groups such as the colorful *Polymita* from Cuba and the *Achatinella* and *Partulina* of tropical Pacific islands. Between 1957 and 2005 he put in more than 15,000 hours of field time in support of, and in collaboration with, the Everglades National Park authorities. He was always willing to share his knowledge and many of today's conchologists who are interested in land snails can share stories of helpful guidance from the expert. There are also quite a few research projects that benefitted from specimens supplied freely by Archie. He considered himself a student of the various land snails he was interested in, and never tired of exploring and learning. He raised more than one batch of *Liguus* in his back yard, taking them from eggs to three-year-old adults. His humor is evident in a story found on the Jacksonville Shell Club Web Site. A particular group of *Liguus* shells had proven difficult to properly identify. They looked like *Liguus fasciatus* f. *barbouri* because banding was a predominant feature, but also like *Liguus fasciatus* f. *marmoratus* because dark mottling was also prominent. Archie Jones said "Call it *barbouri* on Tuesdays and *marmoratus* on Thursdays." (http://www.jaxshells.org) We will miss this quiet unassuming man.



Archie Jones in the field. He loved nothing better than slugging through the Florida swamps in search of his beloved *Liguus*.

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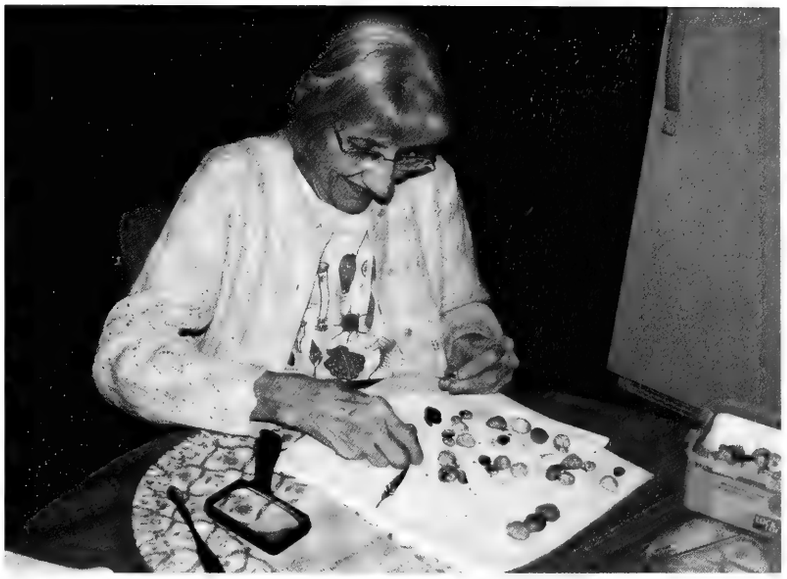
Frieda Schilling

(3 March 1924 -- 19 January 2010)



Fieda Schilling in 2008 examining a few land snails.

With extraordinary personal sadness, I report the passing of a shell collecting giant, Mrs. Frieda Schilling, a lifelong resident of St. Louis City and County, Missouri. Born March 3, 1924, she passed away on January 19, 2010 after several years of declining health. She was preceded in death by her husband Omar in 2006. Omar worked in the 1960's on the original tread plates of the behemoth Crawler Transporters for the NASA Apollo and later Space Shuttle programs which are still in use today. Frieda and her sister Hessie (Hedwig) were among seven children of a family of German immigrants. Frieda and sister Hessie would pick up freshwater mussels and gastropods while they and their husbands were on fishing trips along the Ohio River and other rivers and streams near Paducah, Kentucky, in the early 1960's. When the rivers were high, they would look for land shells. Their collecting data were always excellent, describing habitat, how the shells were found, and specifically the location. In those pre-GPS times, Frieda would always annotate range and township locations from local maps and how to access the collecting site. She often preserved soft parts of the animals as well as the shells.

Hessie and Frieda had a scientific inclination to identify and classify shells when freshwater mollusks were not popular to collect. They corresponded with Alan Solem (Field Museum, Chicago), Bill Clench (Harvard), and David Stansbery of Ohio State, for shell identifications. The sisters would assign their own common name to the shells collected until they could be identified scientifically, such as "big browns" for *Actinonaias ligamentina* and "raspberry and purples," for the brilliant color of the interior nacre for *Leptodea leptodon*. Though neither was a good swimmer, the sisters would not hesitate to cross rivers in a small rubber raft to collect shells. They attended many American Malacological Union (now Society) meetings where Bill Clench would warmly greet them as "My freshwater collecting friends from Missouri." They also collected with David H. Stansbery, R. Tucker Abbott, and Constance (Connie) Boone, among others. Hessie's collection was donated to the American Museum of Natural History in New York and Frieda's collection of over 200 genera was donated to the Field Museum, although she also provided material to the Ohio State Museum, and some wet material is in the Florida Museum of Natural History.

Frieda Schilling traded with 71 other collectors worldwide (primarily US, Europe, Japan, and Australia). The Field Museum of Natural History has the following data on the collection she donated to the museum in 1996: "9,718 lots; marine, land, and freshwater; North America, worldwide. Synoptic collection of worldwide mollusks. Native American land and freshwater material mainly self-collected, excellent documentation; includes alcohol-preserved material."

Frieda and her sister Hessie Kemper were early conservationists for our U.S. freshwater mollusks. I remember The Greater St. Louis Shell Club meeting where they asked our club to oppose the proposed construction of a dam on the Meramec River that would destroy the habitat of many rare mollusks. Our club went on record against the dam and the letter was published in the 1971 Proceedings of a Symposium on the Rare and Endangered Mollusks (Naiads) of the U.S. (page 73). To my knowledge this was the first shell club letter and resolution published opposing a dam construction for protection of freshwater mussels. The dam was not constructed and the Meramac remains a wonderful, natural resource.

Frieda inspired and was a mentor to many of us in the St. Louis Shell Club as she would consistently win the DuPont Awards at our shell shows (this was pre COA Awards) with small but well documented freshwater or land shell displays. I believe she and her sister were among the last to collect *Epioblasma florentina curtisi* (Frierson & Utterbach, 1914) along the Black River, Missouri River, and the Spring River, in northern Arkansas. Of the Black River location she related the shell was never common and in swift current in an area that was later dredged while putting in an overhead power line, destroying the habitat.

She was acknowledged in the publications on Mussels (Naiades) of the Meramec River Basin (1980),"Missouri Naiades: A Guide to the Mussels of Missouri" (1984), and "Missouri Aquatic Snails" (1997) for information and use of specimens. More recently she was honored by the Freshwater Mollusk Conservation Society's 2nd National Symposium in Pittsburgh in 2001 with the William J. Clench Award "for her exemplary contributions to the science of freshwater malacology, emphasizing field collections, sharing information with others in the field and making her collection widely available by depositing them in museums."

We seldom see quiet individual workers who have made such a contribution to freshwater malacology such as Frieda Schilling, and she will be missed.

Alan Gettleman
Merritt Island, Florida

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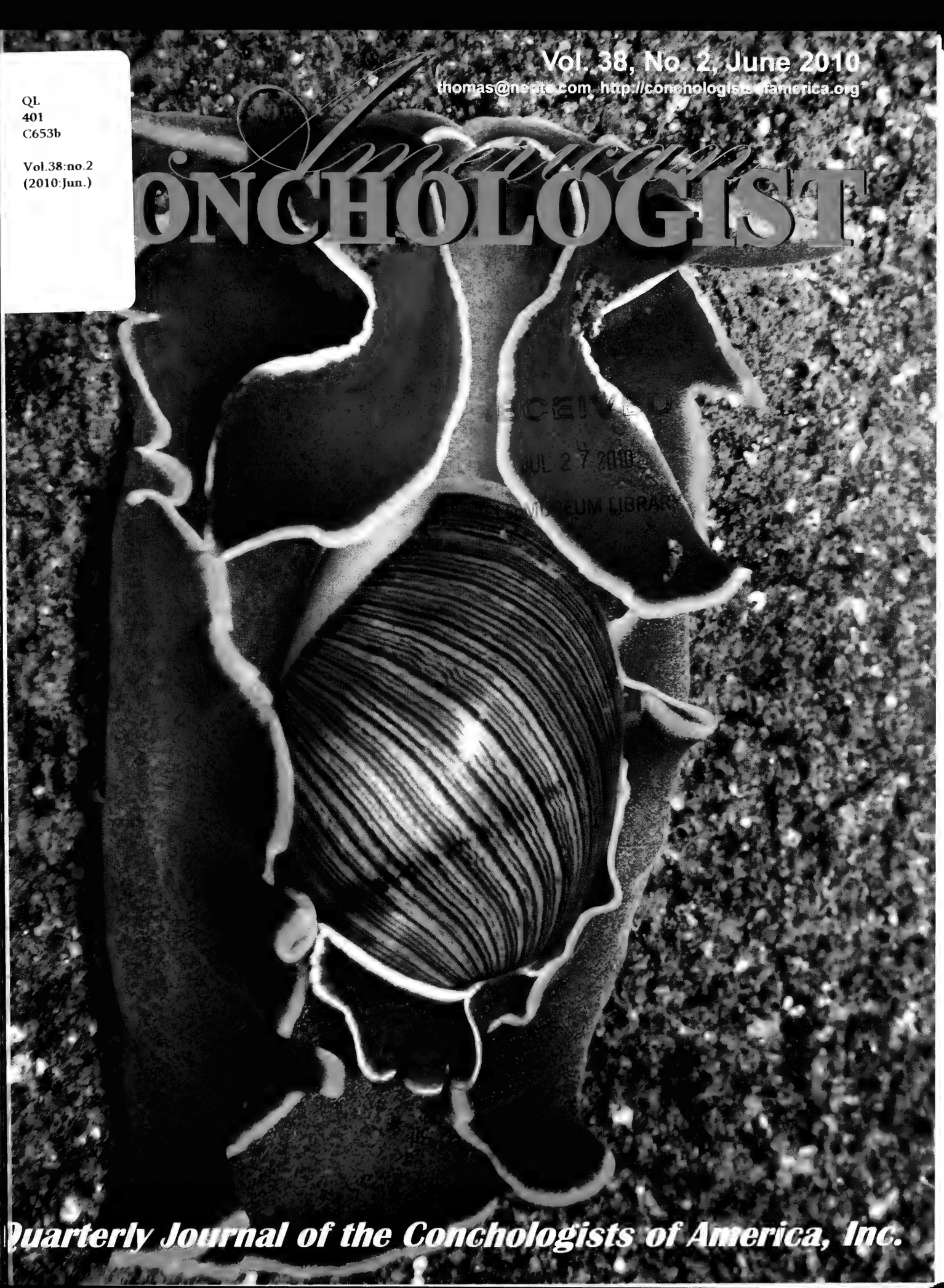
American CONCHOLOGIST



Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS OF AMERICA, INC.

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In This Issue

Front cover: *Hydatina physis* (Linnaeus, 1758), photographed in shallow water off Leyte Island, Philippines. The shell is about 45mm in length. The striped paper bubble lives in tropical waters with a circumglobal distribution and feeds on polychaete worms and mollusks. It lacks an operculum and is unable to retract its entire body into the shell. This photograph is courtesy of Guido & Philippe Poppe. © Guido & Philippe Poppe - www.poppe-images.com

Back Cover: *Opisthostoma mirabile* E.A. Smith, 1893, 4.5mm, from a limestone outcrop in the Kinabatangan Valley, Sabah, Malaysia. This tropical rainforest dweller has an extremely limited range and entire populations, maybe species, can be limited to just a few rocks. Quarrying, fire, and logging have destroyed much of this unique land snail's habitat. Photograph courtesy of Simon's Specimen Shells, Ltd., www.simon's-specimen-shells.com

Editor's comments:

We have another eclectic gathering of articles for this issue, with hopefully something for everyone.

Emilio García reports on a trip to Bocas del Toro, a group of islands in the Atlantic Ocean, off the northwest coast of Panama, where few people have visited much less scientifically sampled for mollusks. As usual, he provides an interesting article and great images.

Next we have a short piece by Bobbi Cordy on a new shell display (Johnson/Cordy Hall of Mollusks) she and husband Jim have established at the Brevard Museum of History and Natural Science. Bobbi also mentions the upcoming Space Coast Seashell Festival in Melbourne, Florida, 15-16 January 2011 and the 2011 COA convention that will be held in Port Canaveral, Florida, 13-17 July 2011.

Sadly we have more members listed in the "In Memoriam" box.

The "Dealers Directory" does not have anyone new this issue, but I think it should be pointed out that these dealers support COA by their participation in shell shows and by purchasing ads in *American Conchologist*. They certainly deserve your consideration for business before a dealer who does not support our organization. We also have a reminder here of the Philadelphia Shell Show, 9-10 October 2010.

Next we have an entry by Robert Robertson. With his Curator Emeritus status from the Academy of Natural Sciences in Philadelphia, he seems to have more time to write for our publication, certainly our gain. This time he provides interesting insight into the intricately patterned and sometimes brightly colored pheasant shells. The color plates will go a long way toward explaining why this group can be so difficult to properly identify.

Our next entry is a most welcome report by Harry Lee, who tells us a bit of history of the Jacksonville Shell Club and then, after talking about club goals and activities, throws in an O'Henry ending by announcing that the club has established a $10,000 research grant for COA. Thank you Jacksonville Shell Club!

We then have the Donald Dan report on upcoming shell shows around the world, followed by a short article on the smallest and ugliest shell collector. Then we have the recent winners at various shell shows and the last promotional piece for the 2010 COA convention. It looks like it will be a great event, see you there.

Finally we have an article from Zvi Orlin on "living fossils." We all think we know what this means, but maybe there will be something in this piece to surprise most readers. One of the "living fossils" mentioned by Zvi is *Spirula spirula*. I am sure this shell is known to most of us, but just in case, here is an image of a 20mm *S. spirula* that just didn't fit into the space for the article.

Tom Eichhorst

Bocas del Toro revisited. A follow-up of Olsson & McGinty's report on the Panamanian Archipelago

Emilio Fabián García

Bocas del Toro is an archipelago located off the northwestern coast of Panama, approximately 9°20'N, 82°15'W. It is composed of five larger islands, with the main town of Bocas located on Isla Colón. In 1917 the well-known malacologist Axel A. Olsson went to the archipelago on a collecting trip because he thought the malacological fauna of the area was being ignored. He returned to the archipelago in 1920 to augment the previous collection, and a third and final time in 1953. On this last trip he was accompanied by Tom McGinty and Jay Weber. In 1958 Olsson and McGinty published the results of their collection efforts, which included the description of more than 30 new species of mollusks.

As the authors pointed out in their publication, their best collecting was on the east side of Isla Colón. Much of the material collected in this zone consisting of "...beach drift, carefully selected in the field, and which on sorting and picking proved extremely rich, especially in the smaller species..." adding, "... it is evident from the large number of species obtained by us in a relatively small time that the Bocas fauna is unusually rich and would repay more extensive work be done." (p.9). I decided to follow their advice more than 50 years after their last expedition.

I had traveled to Panama on several collecting trips in the 1990s, and tried to visit Bocas del Toro on two occasions, but never succeeded. My opportunity arrived in August 2004 when a group of colleagues from the Biology Department at the University of Louisiana at Lafayette and I were invited for a Marine Invertebrate Taxonomy Workshop by Dr. Rachel Collin, director of the Bocas del Toro Research Station of the Smithsonian Tropical Research Institute (STRI). We stayed for a week at the station in Isla Colón, where the Smithsonian maintains splendid research facilities. I had studied Olsson & McGinty's paper carefully every time I thought I was going to make it to Bocas, so thanks to the authors' thoroughness I knew exactly where to go. They stated, "...at this time our best collecting grounds were found to be along the east side of the island [Colón], between Puss Head Point and Long Bay Point or about five to six kilometers north of the city of Bocas del Toro." (p.9) As it turned out, this location was approximately three kilometers (a short bike ride) from the STRI station.

Olsson & McGinty also warned the reader about the poorer areas: "In contrast to the excellent collecting found on the east side of the island, that of the lee shore, which is fringed by mangrove, proved poor." (p.9) They were correct, but I did some snorkeling in the area and discovered some unreported species. Nevertheless, every morning after breakfast my first chore was to get on the bicycle provided by STRI and pedal the three muddy kilometers to the area where little beaches with great drift were to be found. I would use the remainder of my available time (if I was not going on other collecting jaunts with the group) looking under the microscope, "sorting and picking" as Olsson and McGinty had done, probably only two kms south of where I was, thinking, as they had, how "extremely rich" the drift was.

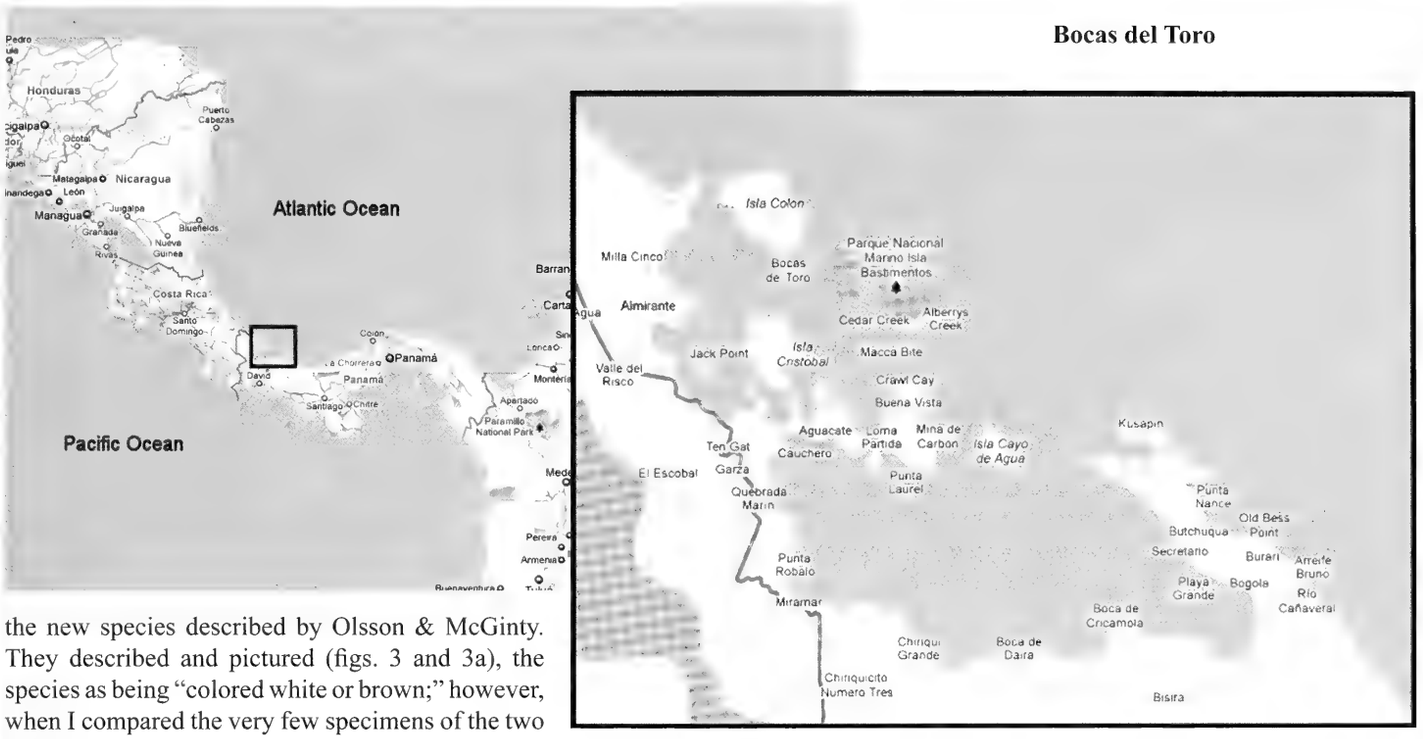
My main desire for going to Bocas del Toro was to find some of the species described by the authors in their *locus typicus*, and to see if the area was still as rich as they had experienced it to be. Both of these goals were attained, but also a welcome *lagniappe* resulted from this collection. A *lagniappe*, by the way, is an unexpected "extra' given to a person by a merchant at the time of a purchase. It is a commonly used word in Cajun country (AKA "who dat" country), in southwestern Louisiana, where I live.

The material I gathered in the in Bocas during my week-long stay (actually only about five full days) in 2004 was augmented in 2008 when Will Schmidt, a colleague who works in the same lab where I do my photography, went to Bocas and brought me a pound of "grunge" from the exact area where I had collected in 2004. he added to this in 2009, when he and Natalia Arakaki, another colleague, brought me two more pounds.

Approximately 207 species belonging to 65 families have been catalogued. The best represented were Columbellidae (18) and Fissurellidae (16), and 42 families were represented by only 1 or 2 species. Because I dedicated a large portion of time in gathering and sorting shells collected at the drift line, the paucity of larger species, when compared with Olsson & McGinty's finds, should not surprise anyone. For example, while the authors list 9 species for Ranellidae and 20 for Muricidae, I list 1 and 5 respectively. On the other hand, I list six species for Triphoridae *vs.* four by them. The *lagniappe* that resulted from my few days of collecting and two separate single trips to the beach by my two colleagues was very much of a surprise, as 37 of the fully identified species had not been reported by Olsson and McGinty. These, as well as other rather arbitrarily selected species that I was not able to identify are marked in the list that follows by one asterisk. The latter were obviously not found in the authors' list, either because of generic placement or unusual conchological features. Other unidentified species were left unmarked; however, some of them, when identified, may eventually turn out to be new for the area. The 33 species that had not been reported from Panama before are marked with two asterisks. All boldfaced taxa are pictured in this article

Of particular interest is *Parvanachis* sp. aff. *nisitella* (Duclos, 1840) (figs. 28-29), which seems to be an unidentified species. Olsson & McGinty must have collected it, as it is common in the drift, but they may have identified it as "*Anachis obesa* (C. B. Adams)." *Parvanachis obesa* does inhabit Bocas del Toro, but it has a different profile from its congener. Compare figs. 26-27 and 28-29).

Another interesting species is *Decipifus sixaolus*, one of



the new species described by Olsson & McGinty. They described and pictured (figs. 3 and 3a), the species as being "colored white or brown;" however, when I compared the very few specimens of the two color forms I noticed some differences. To have a better sense of what was happening I borrowed the *Decipifus* specimens in the collection of Dr Harry G. Lee, which included specimens from the Virgin Islands, Florida, and Yucatan. The "white" specimens run from pure white (Florida, H.G. Lee col.) to different degrees of brown markings, but they all seemed to have a larger protoconch, more pronounced shoulders, and stronger ornamentation than the "brown" specimens. Compare figs. 23 and 24-25). This is a very preliminary assessment because all of the specimens were collected empty and had different degrees of erosion, but the two "forms" deserve closer scrutiny.

The third species I should like to emphasize is *Arene tamsiana* (Philippi, 1852:16) (figs. 2-3). When I first tried to compare this puzzling species with other western Atlantic *Arene* I came up empty-handed, so I sent the specimen to Dr. James McLean (LACM), who has identified it as such. The species was originally described from Puerto Cabello, Venezuela, and has remained a little-known taxon since its description. Other Venezuelan mollusks not reported from Panama before, have shown up in Bocas del Toro: *Barleeia creutzbergi* (Jong & Coomans, 1988), *Caelatura gerhardtae* (Jong & Coomans, 1988), *Decipifus kristenseni* Jong & Coomans, 1988, and *Conus archetypus* Crosse, 1865. This latter taxon will be discussed in a separate article in the August issue of *American Conchologist.*

From the material collected by us in such a relatively short time, I would not be off the mark if I finish this article by giving the same advice Olsson & McGinty gave: it "would repay more extensive work be done."

The identification of so many relatively obscure species required the help of friends and colleagues. My deepest thanks go to Harry G. Lee, of Jacksonville, Florida, who provided requested literature and specimens of *Decipifus* from his collection. Dr. Lee also helped with the identification of some troublesome species. I am also indebted to Henk H. Dijkstra (ZMA), William G. Lyons, James McLean (LACM), Kevin Monsecour, Robert Robertson (ANSP) and Paul Valentich-Scott (SBMNH), who corroborated or provided identification of some species.

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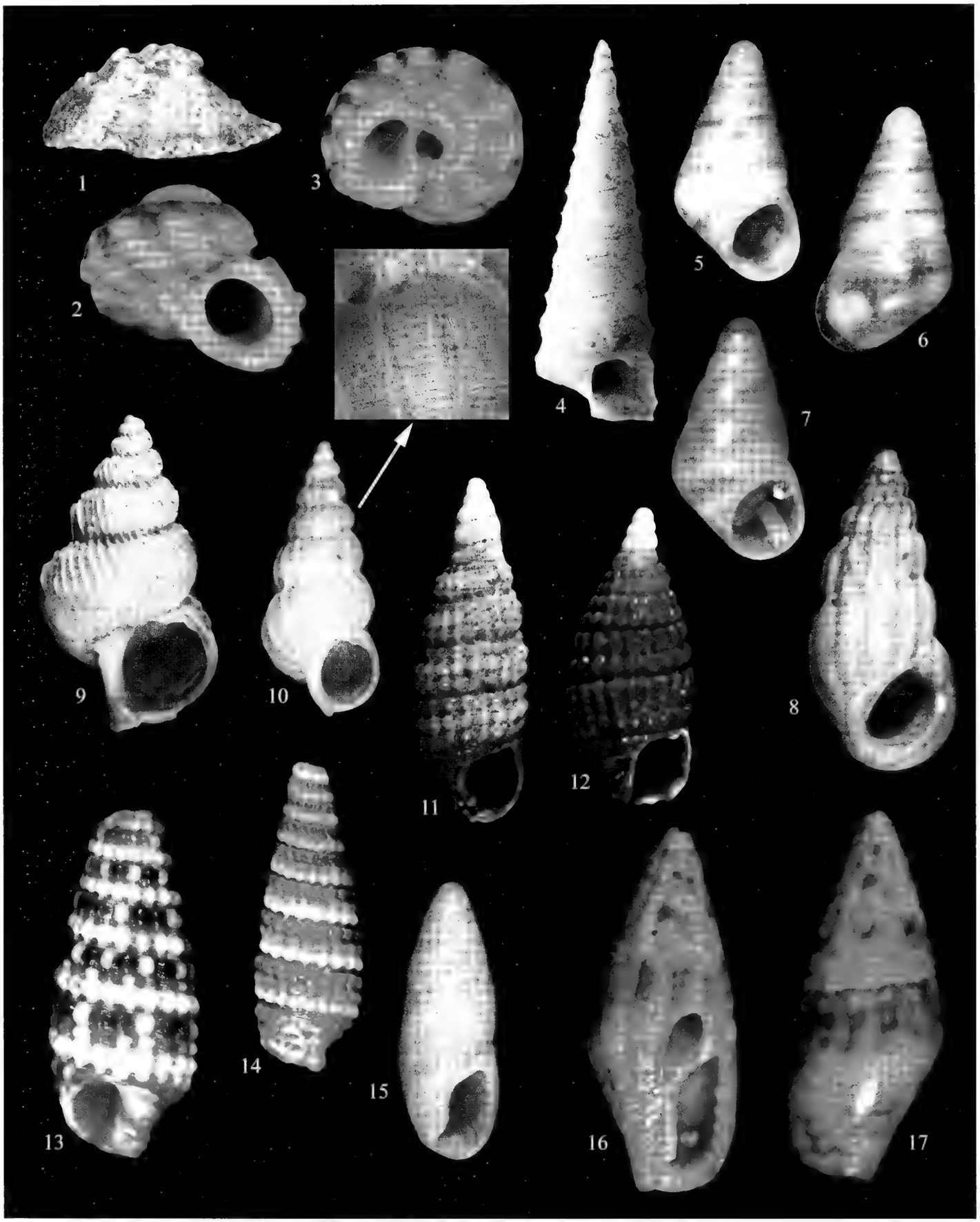
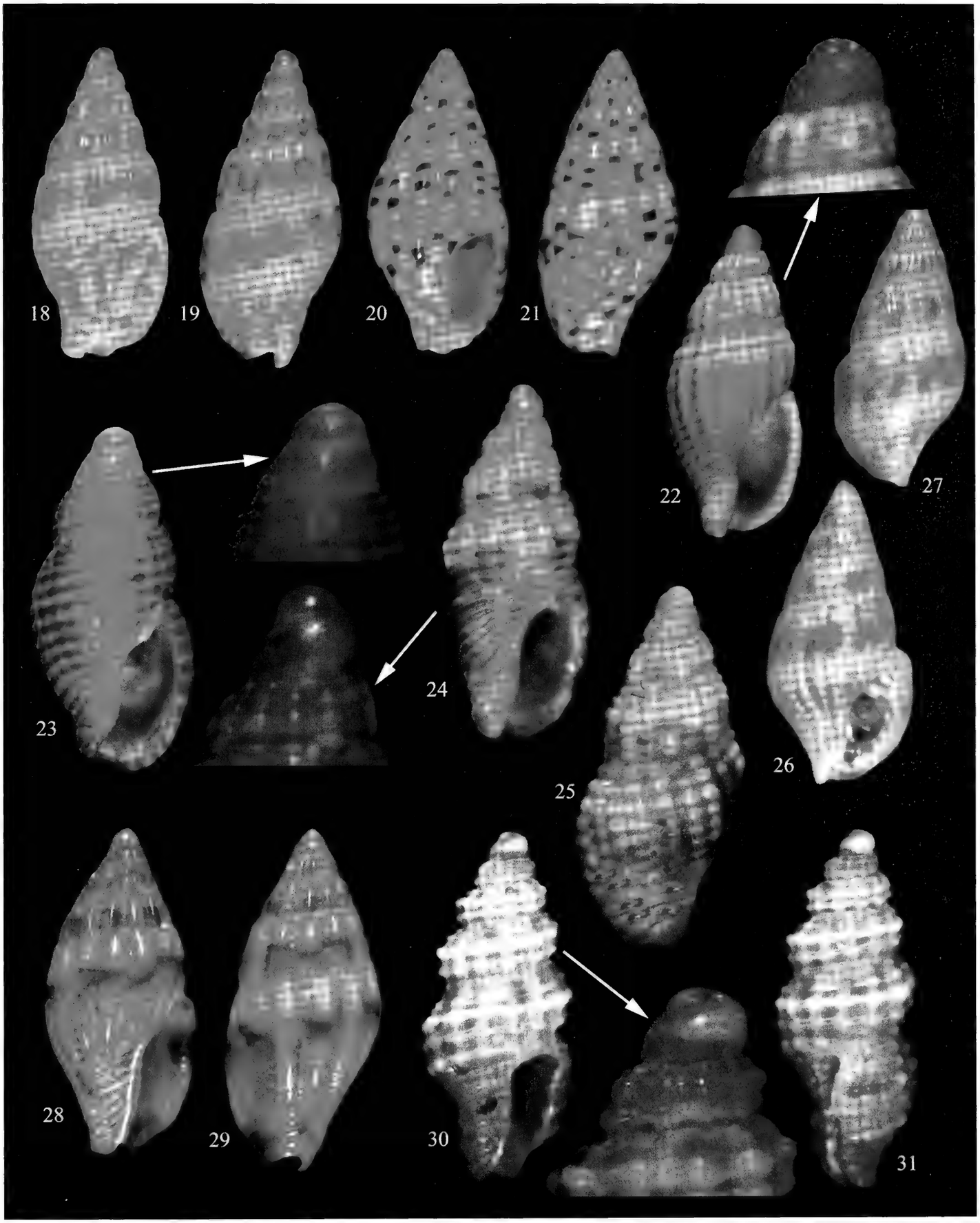
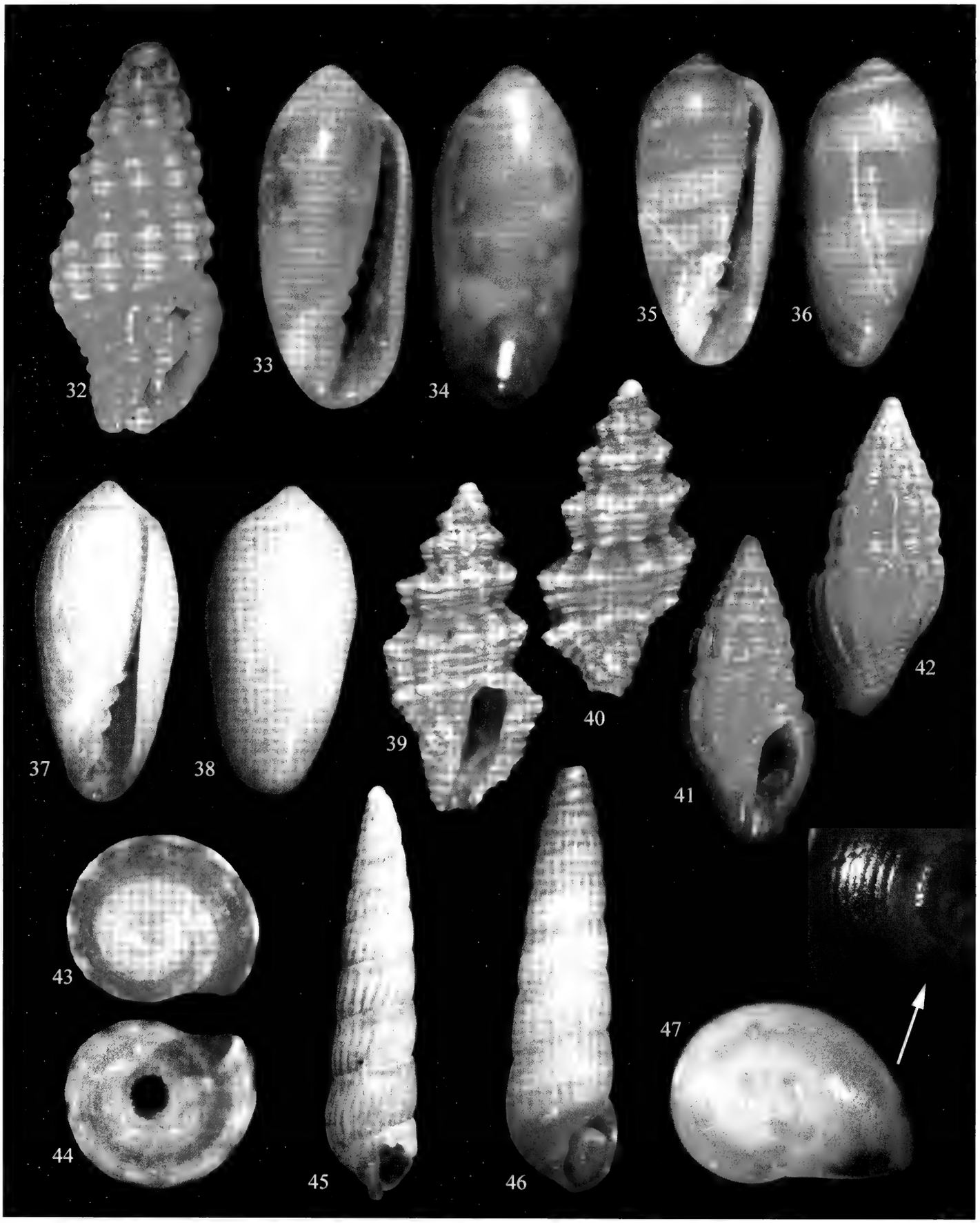
Bocas del Toro Plate 1



Bocas del Toro Plate 2



Bocas del Toro Plate 3



Bocas del Toro Plate 4

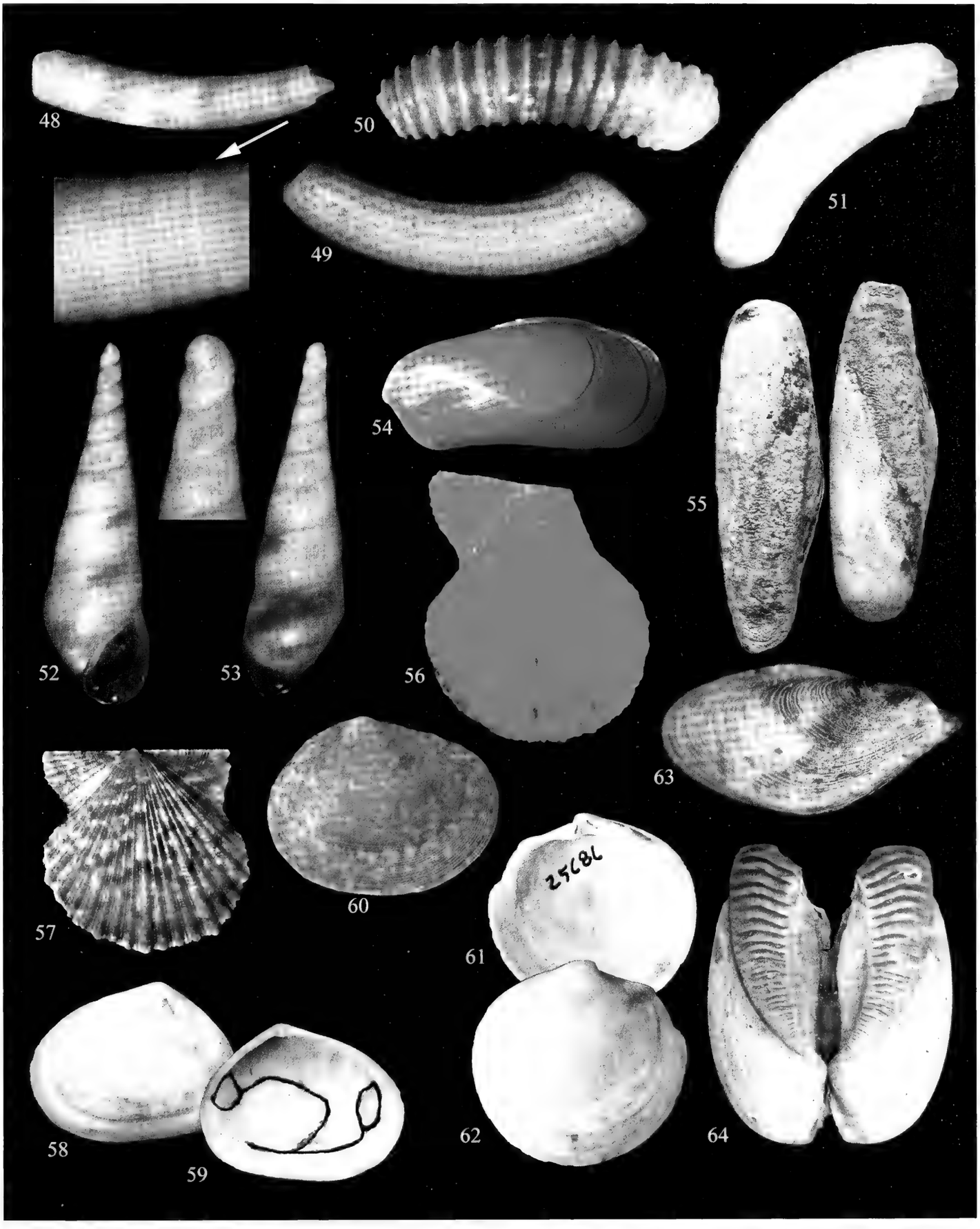


Plate 1, Figures 1-17

1. *Hemitoma emarginata* (Blainville, 1825), 9°19'52. 6"N, 82°15'17.7"W, 1-1.5m, 15.3mm (EFG 26842). **2-3.** *Arene tamsiana* (Philippi, 1852), 9°22.027'N, 82°14.336'W, Colón Is., drift, 5.9mm (EFG 25599). **4.** *Turritella marianopsis* Petuch, 1990, 9°22.027'N, 82°14.336'W, Colón, drift, 26.1mm (EFG 25565). **5-6.** *Barleeia creutzbergi* (Jong & Coomans, 1988), 9°21'47.62"N, 82°14'22. 8"W, Colón, drift, 2.3mm (EFG 29346). **7.** *Caelatura gerhardtae* (Jong & Coomans, 1988), 9°21'47.62"N, 82°14'22.8"W, Colón, drift, 2.4mm (EFG 29345). **8.** *Schwartziella bryerea* of Redfern? not Montagu, 9°21'47.62"N,82°14'22.8"W, Colón, drift, 4.3mm (EFG 29494). **9.** *Epitonium phymanthi* Robertson, 1994, 9°22.027'N, 82°14.336'W, Colón, drift, 10mm (EFG 25629). **10.** *Epitonium tiburonense* Clench & Turner, 1952, 9°22.027'N, 82°14.336'W, Colón, drift, 5mm (EFG 25603). **11.** *Cerithiopsis albovittata* (C.B. Adams, 1850), 9°21'47.62"N, 82°14'22.8"W, Colón, drift, 2mm (EFG 29317). **12.** *Cerithiopsis prieguei* Rolán & Espinosa, 1996, 9°21'47.62"N, 82°14'22.8"W, Colón, drift, 1.75mm (EFG 29316). **13.** *Monophorus olivaceus* (C.B. Adams, 1850), 9°21'47.62"N, 82°14'22.8"W, Colón, drift, 4.9mm (EFG 29470). **14.** *Similiphora intermedia* (C.B. Adams, 1850), 9°21'47.62"N, 82°14'22.8"W, Colón, drift, 3.6mm (EFG 29471). **15.** *Aesopus stearnsii* (Tryon, 1833), 9°21'47.62"N, 82°14'22.8"W, Colón, drift, 3.8mm (EFG 29509). **16-17.** *Costoanachis sertularium* (d'Orbigny, 1841), 9°21'47.62"N, 82°14'22.8"W, Colón, drift, 9.3mm (EFG 25575).

Plate 2, Figures 18-31

18-19. *Costoanachis catenata* (Sowerby I, 1844), 9°22.027'N, 82°14.336'W, Colón, drift, 7.9mm (EFG 25549). **20-21.** *Costoanachis sparsa* (Reeve, 1859), 9°22.027'N, 82°14.336'W, Colón, drift, 7.8 mm (EFG 25574). **22.** *Decipifus kristenseni* Jong & Coomans, 1988, 9°22.027'N, 82°14.336'W, Colón, drift, 3.9mm (EFG 29461). **23.** *Decipifus sixaolus* Olsson & McGinty, 1958, 9°22.027'N, 82°14.336'W, Colón, drift, 3.6mm (EFG 29459). **24-25.** *Decipifus sixaolus* Olsson & McGinty, 1958, 9°22.027'N, 82°14.336'W, Colón, drift, 4.3mm (EFG 29459). **26-27.** *Parvanachis obesa* (C.B. Adams, 1845), 9°22.027'N, 82°14.336'W, Colón, drift, 4.8mm (EFG 25547). **28-29.** *Parvanachis* sp. aff. *nisitella* (Duclos, 1840), 9°22.027'N, 82°14.336'W, Colón, drift, 4.2mm, (EFG 25550). **30-31.** *Steironepion maculatum* (C.B. Adams, 1850), 9°22.027'N, 82°14.336'W, Colón, drift, 4.5mm, (EFG 29463).

Plate 3, Figures 32-47

32. *Steironepion minus* (C.B. Adams, 1845), 9°22.027'N, 82°14.336'W, Colón, drift, 4.7mm (EFG 29458). **33-34.***Volvarina heterozona* (Jousseaume, 1857), 9°22.027'N, 82°14.336'W, Colón, drift, 5.3mm (EFG 29500). **35-36.** *Volvarina rubella* (C.B. Adams, 1845), 9°22.027'N, 82°14.336'W, Colón, drift, 3.9mm (29499). **37-38.***Volvarina sp.*, Pondsuck Reef, Almirante Is., 7mm (EFG 25711). **39-40.** *Glyphoturris rugirima* (Dall, 1889), 9°22.027'N, 82°14.336'W, Colón, drift, 4.5mm (EFG 29452). **41-42.** *Strictispira solida* (C.B. Adams, 1850), 9°22.027'N, 82°14.336'W, Colón, drift, 10.2mm, (EFG 25573). **43-44**. *Psilaxis krebsii* (Mörch, 1875), 9°22.027'N, 82°14.336'W, Colón, drift, 3mm (EFG 25627). **45.** *Turbonilla levis* (C.B. Adams, 1850), 9°22.027'N, 82°14.336'W, Colón, drift, 4.1mm (EFG 29328). **46.** *Turbonilla (Strioturbonilla)* sp. B of Lee (2009), 9°22.027'N, 82°14.336'W, Colón, drift 4.6mm (EFG 29478). **47.** *Teinostoma sp. A.,* 9°22.027'N, 82°14.336'W, Colón, drift, 2.2mm (EFG 29326).

Plate 4, Figures 48-63

48. *Caecum insularum* Moore , 1970, 9°22.027'N, 82°14.336'W, Colón, drift, 4mm (EFG 29511). **49.** *Caecum cycloferum* Folin, 1867, 9°22.027'N, 82°14.336'W, Colón, drift, 3mm (EFG 29510). **50.** *Caecum jucundum* Folin, 1867, 9°22.027'N, 82°14.336'W, Colón, drift, 2mm (EFG 29312). **51.** *Meioceras ryssotitum* Folin, 1867, 9°22.027'N, 82°14.336'W, Colón, drift, 1.7mm (EFG 29349). **52-53.** *Eulimostraca* sp., 9°22.027'N, 82°14.336'W, Colón, drift, 2.3mm (EFG 29335). **54** *Botula fusca* (Gmelin, 1791), Hospital Pt., Colón, 9°20'01.9"N, 82°13'07.7"W, 24.7mm (EFG 25682). **55.** *Lithophaga bisulcata* (d'Orbigny, 1853), Hospital Pt., Colón, 9°20'01.9"N, 82°13'07.7"W, 31mm (EFG 25684). **56.** *Caribachlamys ornata* (Lamarck, 1819), off resort area, Bocas del Drago, NW Colón, in 3-10m, 17.5mm (EFG 25721). **57.** *Leptopecten bavayi* (Dautzenberg 1900), Almirante pilings, Almirante, 12.7mm (EFG 25731). **58-59.** *Macoma pseudomera* Dall & Simpson, 1901, Almirante pilings, off Almirante, 23.6mm (EFG 25685). **60.** *Semele purpurascens* (Gmelin, 1791), Cayo Adriana, 9°14.456'N, 82°10.413'W, in 3-10m, 25.7mm (EFG 25640). **61-62.** *Cyclinella tenuis* (Récluz, 1852), Almirante pilings, Almirante, 27.4mm (EFG 25686). **63.** *Gastrochaena ovata* Sowerby I, 1834, off resort area, Bocas del Drago, NW Colón, in 3-10m, 12.6mm (EFG25724). **64.** *Spengleria rostrata (Spengler, 1783)*, off resort area, Bocas del Drago, NW Colón, in 3-10m, 33.7mm (EFG 25729).

LIST OF SPECIES COLLECTED IN BOCAS DEL TORO ARCHIPELAGO, PANAMA

Boldface taxa are pictured in this article.
Taxa with one asterisk (*) were not reported by Olsson & McGinty.
Taxa with two asterisks (**) have not been previously reported from Panama.

Lottia jamaicensis (Gmelin, 1791)
Patelloida pustulata (Helbling, 1779)
Diodora arcuata Sowerby II, 1862
Diodora cayenensis (Lamarck, 1822)
Diodora dysoni (Reeve, 1850)
Diodora fargoi (Olsson & McGinty, 1958)
Diodora listeri (d'Orbigny, 1847)
Diodora minuta (Lamarck, 1822)
Diodora sayi Dall, 1899
Diodora variegata (Sowerby II, 1862)
Emarginula phrixodes Dall, 1927
Emarginula pumila (A. Adams, 1851)
Fissurella fascicularis Lamarck, 1822
Fissurella angusta (Gmelin, 1791)
Fissurella rosea (Gmelin, 1791)
****Hemitoma emarginata* (Blainville, 1825) (fig. 1)**
Hemitoma octoradiata (Gmelin, 1791)
Lucapina suffusa (Reeve, 1850)
Calliostoma javanicum (Gmelin, 1791)
Arene riisei Rehder, 1843
****Arene tamsiana* (Philippi, 1852) (figs. 2-3)**
Eulithidium affine (C.B. Adams, 1850)
Eulithidium tessellatum (Potiez & Michaud, 1838)
Lithopoma caelata (Gmelin, 1791)
Parviturbo rehderi Pilsbry & McGinty, 1945
Nerita versicolor Gmelin, 1791
Smaragdia viridis (Linnaeus, 1758)
Bittiolum varium (Pfeiffer, 1840)
Cerithium eburneum Bruguière, 1792
Cerithium lutosum Menke, 1828
Alaba incerta (d'Orbigny, 1841)
Angiola lineata (da Costa, 1778)
***Turritella marianopsis* Petuch, 1990 (fig. 4)**
Echinolittorina meleagris (Potiez & Michaud, 1838)
Echinolittorina ziczac (Gmelin, 1791)
Littoraria nebulosa (Lamarck, 1822)
Littoraria tessellata (Philippi, 1847)
****Barleeia creutzbergi* (Jong & Coomans, 1988) (figs. 5-6)**
****Caelatura gerhardtae* (Jong & Coomans, 1988) (fig. 7)**
Lirobarleeia chiriquiensis (Olsson & McGinty, 1958)
***Caecum cycloferum* Folin, 1867 (fig. 49)**
****Caecum insularum* Moore , 1970 (fig. 48)**
***Caecum jucundum* Folin, 1867 (fig. 50)**
Caecum pulchellum Stimpson, 1851
***Meioceras ryssotitum* Folin, 1867 (fig. 51)**
Meioceras nitidum (Stimpson, 1851)
Rissoina cancellata Philippi, 1847
Rissoina decussata (Montagu, 1903)
Schwartziella bryerea (Montagu, 1893)
Schwartziella cf.*bryerea* (Montagu, 1893)
Schwartziella fischeri (Desjardin, 1949)
****Schwartziella bryerea*** of Redfern (2001)?, not Montagu(fig.8)
Stosicia aberrans (C.B. Adams, 1850)
Zebina browniana (d'Orbigny, 1842)
Alvania auberiana (d'Orbigny, 1847)
Parviturboides interruptus (C. B. Adams, 1850)
Hydrobiid sp.
***Teinostoma* species A (fig. 47)**
Teinostoma species B
Vitrinella elegans Olsson & McGinty, 1958
Vitrinella helicoidea C.B. Adams, 1850
Hipponix antiquatum (Linnaeus, 1767)
Hipponix subrufus (Lamarck, 1819)
Niveria quadripunctata (Gray, 1827)
Pusula pediculus (Linnaeus, 1758)
Natica canrena (Linnaeus, 1758)
Polinices lacteus (Guilding, 1834)
Bursa granularis (Röding, 1798)
Cymatium martinianum (d'Orbigny, 1847)
Epitonium albidum (d'Orbigny, 1842)
Epitonium foliaceicosta (d'Orbigny, 1842)
Epitonium lamellosum (Lamarck, 1822)
****Epitonium phymanthi* Robertson, 1994 (fig. 9)**
****Epitonium tiburonense* Clench & Turner, 1952 (fig. 10)**
Epitonium unifasciatum (Sowerby II, 1844)
Opalia hotessieriana (d'Orbigny, 1842)
Eulima bifasciata d'Orbigny, 1841
Eulima cf.fuscostrigata (Carpenter, 1864)
Eulima species A
Eulima species C
****Eulimostraca* sp. (figs. 52-53)**
Melanella eulimoides (C.B. Adams, 1850)
Melanella hypsela (Verrill & Bush, 1900)
Melanella cf.jamaicensis (C.B. Adams, 1845)
Melanella jamaicensis (C.B. Adams, 1845)
Melanella species 5 Jong & Coomans, 1988
Vitreolina arcuata (C.B. Adams, 1850)
****Cerithiopsis albovittata* (C.B. Adams, 1850) (fig. 11)**
Cerithiopsis greenii (C.B. Adams, 1839)
Cerithiopsis vicola Dall & Bartsch, 1911
****Cerithiopsis prieguei* Rolán & Espinosa, 1996 (fig. 12)**
Retilaskeya bicolor (C.B. Adams, 1845)
Seila adamsi (H.C. Lea, 1845)
Metaxia abrupta (Watson, 1880)
****Monophorus olivaceus* (C.B. Adams, 1850) (fig. 13)**
Marshallora nigrocincta (C.B. Adams, 1839)
Nototriphora decorata (C.B. Adams, 1850)
****Similiphora intermedia* (C.B. Adams, 1850) (Fig. 14)**
"*Triphora*" species A
Dermomurex pauperculus (C.B. Adams, 1850)
Favartia alveata (Kiener, 1842)
Plicopurpura patula (Linnaeus, 1758)
Risomurex caribbaeus (Bartsch & Rehder, 1939)
Risomurex deformis (Reeve, 1846)
Coralliophila caribbaea Abbott, 1958
****Aesopus stearnsii* (Tryon, 1833) (fig. 15)**
Astyris lunata (Say, 1826)
Conella ovulata (Lamarck, 1822)
***Costoanachis catenata* (Sowerby I, 1844) (figs. 18-19)**
****Costoanachis sertularium* (d'Orbigny, 1841) (figs. 16-17)**
****Costoanachis sparsa* (Reeve, 1859) (figs. 20-21)**
****Decipifus kristenseni* Jong & Coomans, 1988 (fig. 22)**
***Decipifus sixaolus* Olsson & McGinty, 1958 (figs 23-25)**
Mazatlania cosentini (Philippi, 1836)
Mitrella dichroa (Sowerby I, 1844)
Mitrella ocellata (Gmelin, 1791)
***Parvanachis obesa* (C.B. Adams, 1845)(figs. 26-27)**
****Parvanachis* sp. aff. *nisitella* (Duclos, 1840) (figs. 28-29)**
Rhombinella laevigata (Linnaeus, 1758)
***Steironepion maculatum* (C.B. Adams, 1850) (fig.s 30-31)**
****Steironepion minus* (C.B. Adams, 1845) (fig. 32)**
Steironepion moniliferum (Sowerby I, 1844)
Bailya parva (C.B. Adams, 1850)
Engina turbinella (Kiener, 1835)
Polygona brevicaudata (Reeve, 1847)
Leucozonia nassa (Gmelin, 1791)
Mitra barbadensis (Gmelin, 1791)
Mitra nodulosa (Gmelin, 1791)
Vexillum gemmatum (Sowerby II,.1874)
Vexillum puella (Reeve, 1845)
Jaspidella blainesi (Ford, 1898)
Oliva reticularis Lamarck, 1810
Olivella marmosa (Olsson & McGinty, 1958)
Vasum muricatum (Born, 1778)
Persicula catenata (Montagu, 1803)
Persicula weberi Olsson & McGinty, 1958
Plesiocysticus larva (Bavay, 1922)
Prunum guttatum (Dillwyn, 1817)
Prunum leonardhilli Petuch, 1990
Volvarina avena (Kiener, 1834)
****Volvarina heterozona* (Jousseaume, 1857) (figs. 33-34)**
****Volvarina rubella* (C.B. Adams, 1845)(figs. 35-36)**
***Volvarina* species (figs. 37-38)**
Hastula hastata (Gmelin, 1791)
Hastula salleana (Deshayes, 1859)
***Conus archetypus* Crosse, 1865
Conus cardinalis Hwass, 1792
Conus jaspideus Gmelin, 1791
Conus mus Hwass, 1792
***Strictispira solida* (C.B. Adams, 1850) (figs. 41-42)**

Crassispira elatior (C. B. Adams, 1845)
Cymakra dubia (Olsson & McGinty, 1958)
Nannodiella vespuciana (d'Orbigny, 1842)
Pilsbryspira leucocyma Dall, 1883
Cryoturris quadrilineata (C.B. Adams, 1850)
****Glyphoturris rugirima* (Dall, 1889) (figs. 39-40)**
Pyrgocythara albovittata (C.B. Adams, 1945)
Pyrgocythara plicosa (C.B. Adams, 1850)
Heliacus bisulcatus (d'Orbigny, 1842)
Heliacus cylindricus (Gmelin, 1791)
Heliacus perrieri (Rochebrunne, 1881)
****Psilaxis krebsii* (Mörch, 1875) (figs. 43-44)**
Boonea jadisi (Olsson & McGinty, 1958)
Chrysallida gemmulosa (C.B. Adams, 1850)
Odostomia? species
Triptychus niveus (Mørch, 1875)
****Turbonilla levis* (C.B. Adams, 1850) (fig. 45)**
Turbonilla pupoides (d'Orbigny, 1842)
****Turbonilla (Strioturbonilla)* sp. B** of Lee (2009)(fig. 46)
Haminoea glabra (A. Adams, 1850
Atys sandersoni Dall, 1881
Pedipes mirabilis (Mühlfeld, 1816)
Williamia krebsii (Mørch, 1877)

BIVALVES
****Botula fusca* (Gmelin, 1791) (fig. 54)**
****Lithophaga bisulcata* (d'Orbigny, 1853) (fig. 55)**
Barbatia cancellaria (Lamarck, 1819)
Cucullearca candida (Helbling, 1779)
Scapharca chemnitzii (Philippi, 1851)
Lima caribaea (d'Orbigny, 1853)
Bractechlamys antillarum (Récluz, 1853)
Caribachlamys imbricata (Gmelin, 1791)
****Caribachlamys ornata* (Lamarck, 1819) (fig. 56)**
Euvola ziczac (Linnaeus, 1758)
***Leptopecten bavayi* (Dautzenberg 1900)(fig. 57)**
Codakia orbicularis (Linnaeus, 1758)
Divalinga quadrisulcata (d'Orbigny, 1842)
Lucina pensylvanica (Linnaeus, 1758)
Ctena orbiculata (Montagu, 1808)
Phlyctiderma semiasperaum (Philippi, 1836)
Chama florida Lamarck, 1819
Crassinella lunulata (Conrad, 1834)
Laevicardium laevigatum (Linnaeus, 1758)
Papyridea soleniformis (Bruguiere, 1789)
Trachycardium muricatum (Linnaeus, 1758)
Trigoniocardia media (Linnaeus, 1758)
****Cyclinella tenuis* (Récluz, 1852) (fig. 61)**
****Macoma pseudomera* Dall & Simpson, 1901 (figs. 58-59)**
Tellinella listeri Röding, 1798
Donax striatus Linnaeus, 1767
Semele proficua Pulteney, 1799
***Semele purpurascens* (Gmelin, 1791)(fig.60)**
Petricola lapicida (Gmelin, 1791)
Juliacorbula aequivalvis (Philippi, 1836)
****Gastrochaena ovata* Sowerby I, 1834 (fig. 62)**
****Spengleria rostrata* (Spengler, 1783) (fig. 63)**
Thracia species

FRESH WATER
Thiara species

A New Shell Display

Bobbi Cordy

The new "Johnson/Cordy Hall of Mollusks" will open at the Brevard Museum of Natural History, 2201 Michigan Avenue, Cocoa, Florida, within the next 6-9 months. Johnnie Johnson (a former member of the Astronaut Trail Shell Club and now deceased), retired US Navy, has most of his collection located at the museum. The collection is housed in shell cabinets, disorganized, and very dimly lit. The shells are numbered and binders on top of each cabinet list the corresponding names for the shells. These binders are seldom used. Most visitors just casually go through the drawers.

In October 2009, Jim's 97 year old Mom passed away and left us a goodly sum of money and we had to decide just what we wanted to do with it. Jim's first response was, "I want a shell museum." My mouth was agape! I figured he would say new house, new car, etc. Well we sat down with paper and pencil and looked at the associated costs: property, a building (owned or rented), maintenance, utilities, security, salary for curator and assistant, insurance, etc. etc. etc. The sum was not trivial.

We had recently been invited by the Administrator at the Brevard Museum to view Johnnie Johnson's collection. We were quite disappointed at the way this collection looked and found it was mostly a funding (or lack thereof) issue. So the "wheels

The front entrance to the Brevard Museum of History and Natural Science. Hopefully within this next year the sell display will be completely redone and upgraded into "The Johnson/Cordy Hall of Mollusks."

started turning." We offered to completely remodel the room, add some really nice glass cases, add many of our own shells, and name it "The Johnson/Cordy Hall of Mollusks".

The name had a double meaning for us as Jim's mom enjoyed shells and traveled with us to Mexico several times when we lived in California. Her maiden name was Johnson, so we know this will be a great memorial to her.

There happens to be a large case in the center of the room full of sand. I am going to add sea grass and rocks and display my models of living mollusks to make it look like "under the sea."

Another dream we have always had is to share some of the great shell show exhibits with more of the public than is able to view them with a short weekend presentation. We hope to do that by rotating exhibits by some of the winners from our Space Coast Seashell Festival. We already have several shellers who agree this is a good idea and are willing to help in any way. For Jim and I this is also a way of regaining some space in our shell room at home.

Jim and I plan to give monthly shell talks or craft demonstrations and we will try to generate more publicity for the museum. Hopefully, this will benefit both the museum and our shell club. The "Hall of Mollusks" will be open in time to be offered as one of the field trips for the 2011 COA convention.

James and Bobbi Cordy
Merritt Island, Florida

Shelling Trips to the Bahamas

Space Coast Seashell Festival, Melbourne Florida January 15-16, 2011

In memoriam:

June Huie (page 23)
Betty Muirhead
Dorothy Schneider
Olese Walton
Israel (Issy) Yeroslavsky

PHEASANT SNAILS (*PHASIANELLA*)

Robert Robertson

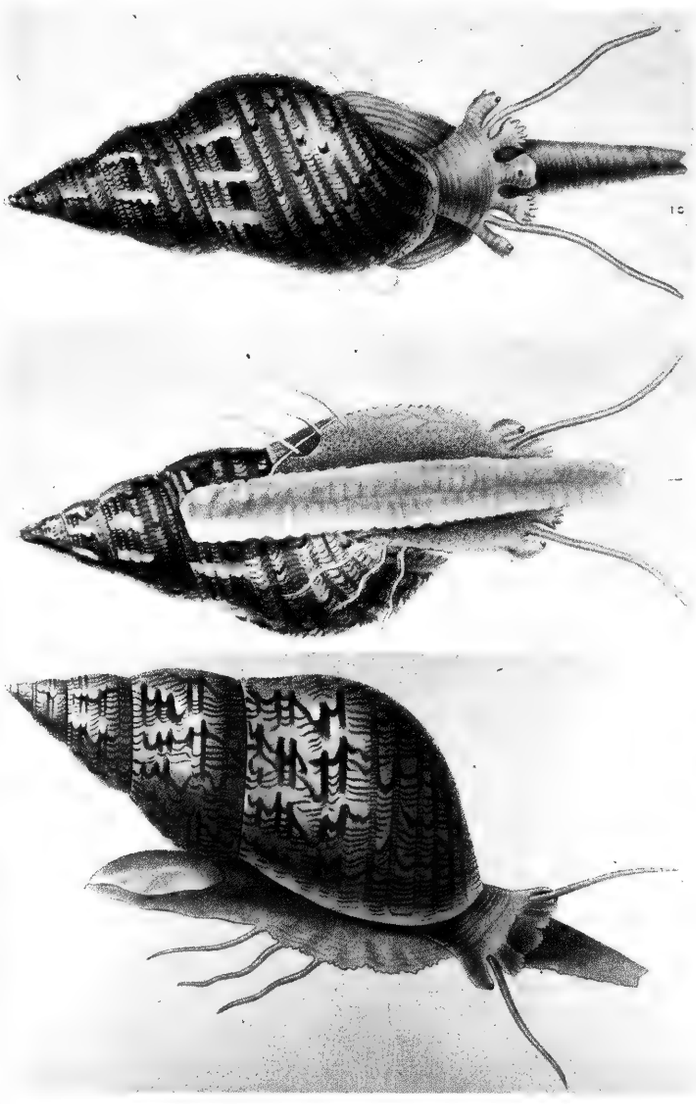


Plate A. Living *Phasianella australis*: dorsal, ventral, and right lateral views. Top and middle images from Quoy & Gaimard (1833), bottom image from Kiener (1847).

Plate B. *P. australis*: extremes in observed adult shell shapes, mm scale.

I have not published much on *Phasianella* before now because I thought my results too inconclusive. The purpose of this paper is to summarize what I learned, particularly as regards nomenclature, and to suggest future avenues of research.

Pheasant snails (Phasianellidae) have been placed in three subfamilies (Phasianellinae, Tricoliinae, and Gabrieloninae), based on the genera *Phasianella* Lamarck, 1804, *Tricolia* Risso, 1826, and *Gabrielona* Iredale, 1917. Most of their shells and external body surfaces are extremely variable as to colors and patterns. They are spotted, striped or lined spirally or diagonally, often with subsutural "flames." Only on small or young *Phasianella* are there "spiral capillary lines." These are features of the color pattern and not sculptural. *Phasianella* shells do not fluoresce in short- and mixed-wave length ultraviolet; *Tricolia* does so from both, with red coloration fluorescing red (personal observations). *Phasianella* attains the largest sizes, and *Gabrielona* species are smaller than most *Tricolia* species. Length - width variation is greatest in *Tricolia. Gabrielona* is invariably low-spired. Shell whorls are mostly smoothly rounded, but in two probably independently evolved *Tricolia* species, spiral cording and whorl shouldering are variably developed. Mature males are probably always smaller than females, but pronounced sexual shell dimorphism has evolved at least once, possibly twice, in Indo-West Pacific *Tricolia. Phasianella* differs from *Tricolia* in lacking an umbilical chink. Unlike their supposed relatives *Turbo* and *Trochus,* phasianellid shells all lack mother-of-pearl (nacre) internally. Only *Gabrielona* has a faint, incised spiral line ("palatal sulcus") in the middle or high in the aperture, and two or three apertural denticles. Like *Turbo*, though, phasianellids have calcareous opercula; *Trochus* have corneous opercula. The opercula are few-whorled: those of both *Phasianella* and *Tricolia* have convex and mostly smooth

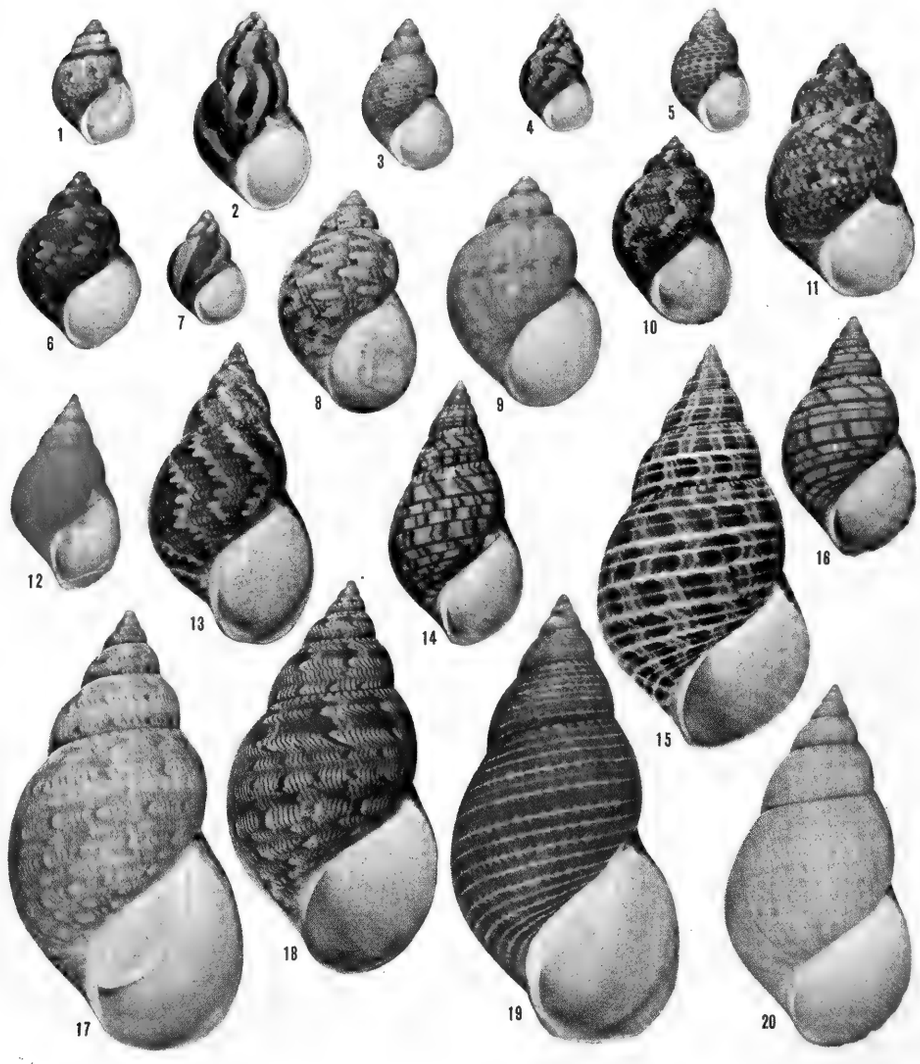


Plate C. Adult shells of *P. ventricosa* (figs. 1-11) and *P. australis* (figs. 12-20). All temperate southern Australia. All to same scale.

outer surfaces (pl. E); those of *Gabrielona* are spirally ribbed externally and are thickest marginally. Cladograms in a recent molecular study (Williams *et al.*, 2008) show that *Phasianella, Tricolia,* and *Gabrielona* cluster near the Colloniidae (a surprise) and separate from all the remaining Trochoidea (Turbinidae and Trochidae, etc.). The superfamily Phasianelloidea was newly so-ranked.

Long ago, I published on the systematics of *Tricolia* in the tropical western Atlantic and the tropical and temperate Indo-West Pacific, on *Gabrielona* in the Indo-West Pacific, and on *Eugabrielona* Hickman & McLean, 1990 fossil and living in the West Indies. The last differs from *Gabrielona* primarily by radular characters; the shells are closely similar but are spirally sulcate. Radula morphology varies little in *Phasianella,* but is diverse particularly in Indo-West Pacific *Tricolia,* calling in question the generic distinctness of *Eugabrielona. T. "variabilis* (Pease, 1861)" has sexually dimorphic radulae that also vary geographically in correlation with shell size. This and some other species of *Tricolia* undergo striking radular ontogeny. Warén (1990) wisely opposed recognizing genera based solely on radular characters. Middle American *Tricolia* species belong in *Eulithidium* Pilsbry, 1898, which deserves no higher rank than subgenus if it is to be coordinate with taxa in the Indo-West Pacific. Adults are distinct mainly in having four pairs of radular lateral teeth; elsewhere, adult *Tricolia* have either five or three pairs. I based some western Atlantic subspecies mainly on shell color patterns. They greatly need restudy, using other shell and animal characters.

With the possible exception of *Tricolia indica* Winckworth, 1940, which lives in an anomalous habitat and has a tiny aberrant radula showing some juvenile traits (Robertson, 1985), all phasianellids are probably unselective herbivores or detritivores restricted to shallow waters. Their shell pigments are largely retained or derived from algal pigments. *Phasianella australis* reproduction was studied by Murray (1967). Spermatozoa and 0.14mm eggs were shed freely in an aquarium. The eggs, fertilized in small dishes, became brilliant-green, free-swimming trochophore larvae. The length of the planktonic stage remains unknown.

Although it occurred in the Middle Miocene of eastern Europe (Romania), true *Phasianella* is now restricted to the tropical Indo-West Pacific and temperate southern Australia. It is present at the northern ends of the Red Sea and Persian Gulf, south to Mozambique, east to southeastern Honshu (Chiba Prefecture), Japan, south to northern and southern Australia (not New Zealand), and east to southern Polynesia (at least to Samoa); it is absent from Hawaii.

Far the largest two species of *Phasianella* occur in non-tropical southern Australia (pl. C): *P. australis* (Gmelin, 1791), the type species, and *P. ventricosa* Swainson, 1822. The former attains a length of about 10cm, and the latter is smaller and has a lower spire. Both have been named excessively. A synonymy of *P. australis* was given in Robertson (1958: 255-256) and is repeated here in table 1 with the addition of *P. marchei* Mabille, 1888 (wrongly "Philippines"). A list of synonyms of *P. ventricosa* is presented in Table 2. These two have brittle shells, unlike the still smaller species, and repaired breaks change shell shapes (pl. B) and disrupt color patterns (pl. C, fig. 2). *P. australis* and *P. ventricosa* live from southern Western Australia east to Victoria and Tasmania. Subfossils from New South Wales are smaller and appear intermediate.

P. angasi Crosse, 1864, type locality: Port Elliot, South Australia, co-occurs with *P. australis* and *P. ventricosa,* and is much smaller than either of these (pl. D, figs. 3-6, pl. F). It closely resembles some forms of *P. "solida* (Born, 1778)" but has less inflated spire whorls. Curiously, I have yet to see a live-collected specimen, but it has been recorded to a depth of 22 fathoms.

P. solida is here called a "complex" because, as will be shown later, it comprises perhaps as many as 20 or 30 closely similar subspecies or species occurring singly at each of its localities throughout most of the tropical Indo-West Pacific (pl. D, figs. 7-42). Both sexes show extreme geographic variation in maximum attained shell size throughout the area (pl. I). This is like *Tricolia variabilis* in the broad sense (Robertson, 1985: pl. 86), another complex; but the largest and smallest shells in each of these complexes occur in different places, and there is no pronounced sexual shell dimorphism in *Phasianella* as there is in the *Tricolia*. The largest *P. "solida"* shells occur at Mozambique and the smallest adult sizes are attained at Samoa (pl. H). The difference in shell volume is 20- to 30-fold.

Shell and operculum colors, shell shape, shell microsculpture, and a radular character all show geographic variation in the *P. solida* complex. Examples: in Japan and the Bonins, shells tend to be more red or pink than elsewhere, often with orange around the aperture. In Queensland and nearby New Caledonia, operculum exteriors are usually tinged with yellow; elsewhere, they are always white. Spire height varies, as does also the degree to which whorls are swollen. Shells are spirally corded in the entire Indian Ocean east to northern Australia and New Caledonia. The cords are finest and faintest in Sri Lanka and Western Australia; elsewhere in the western Pacific cords are rare or absent. Then in the southwestern Indian Ocean the unworn tips of the inner marginal radular teeth are asymmetrically truncated; elsewhere, they are asymmetrically pointed. Using this mosaic of characters, the geographic provenance of shells without locality data can sometimes be ascertained.

These cases of geographic variation in the *P. solida* complex are probably indicative of "archipelagic differentiation." This was first reported in the eastern Indian Ocean and western- and mid-Pacific Ocean turbinid *Astralium "rhodostomum* (Lamarck, 1822)" by Meyer *et al.* (2005). What had been considered a somewhat variable, widespread species was shown by molecular genetics, external body color patterns, and cladistics to be developing localized populations, subspecies, or even

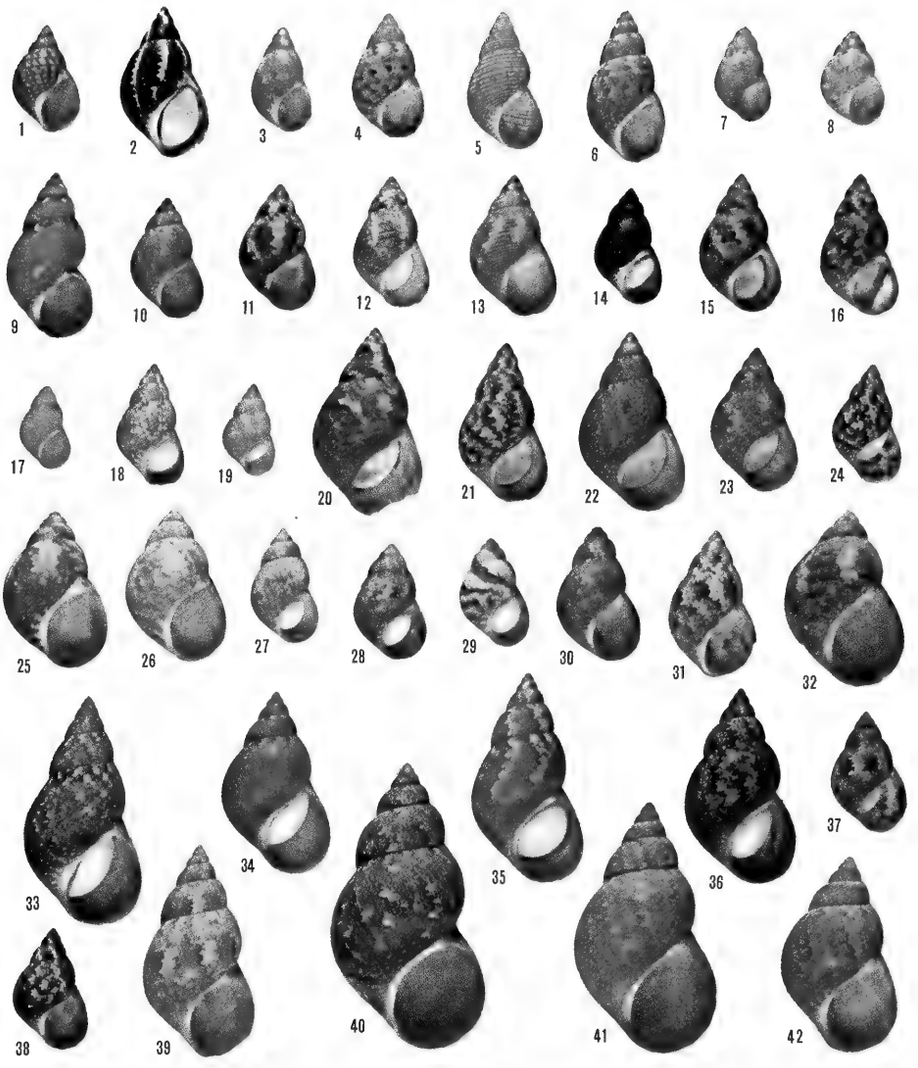


Plate D. Juvenile *P. australis* (figs. 1-2) and adult *P. angasi* (figs. 3-6); all temperate southern Australia. *P. solida* complex (figs. 7-42): adults from numerous tropical Indo-West Pacific localities. All to same scale.

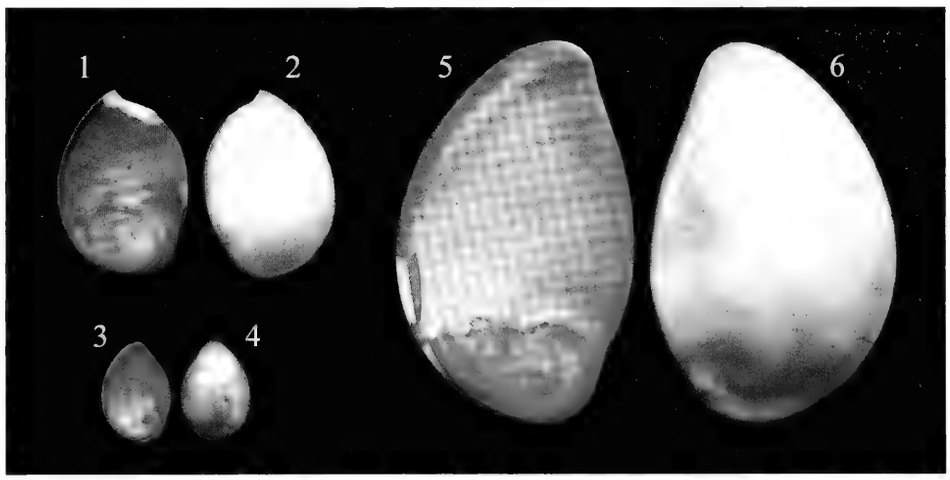


Plate E. Calcareous opercula (yellow concave interiors with an organic periostracum-like covering on the left and white convex exteriors on the right) of *P. ventricosa* (figs. 1-2), *P. solida* (figs. 3-4), and *P. australis* (figs. 5-6).

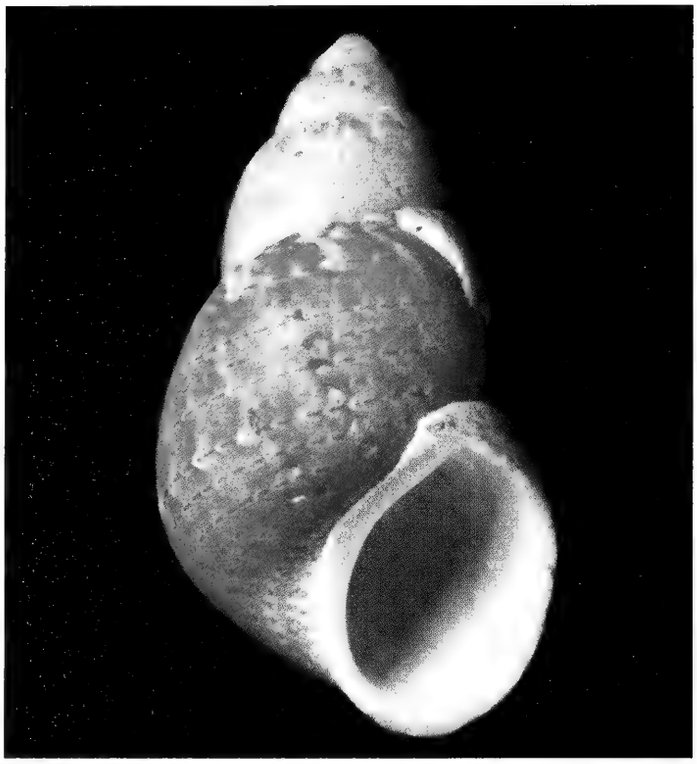


Plate F. *P. angasi.* Holotype from South Australia. Length: 22.5mm.

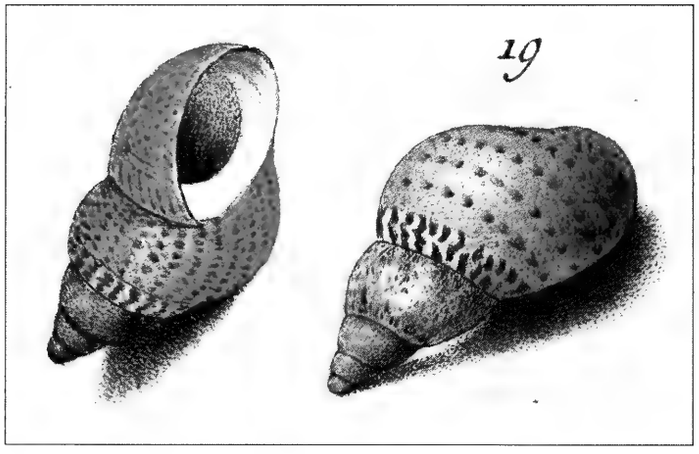


Plate G. *P. solida.* Original illustrations of "*Helix*" *solida* Born, 1778. From Born (1780, pl. 13, figs. 18-19). Locality unknown. Length about 20-25mm.

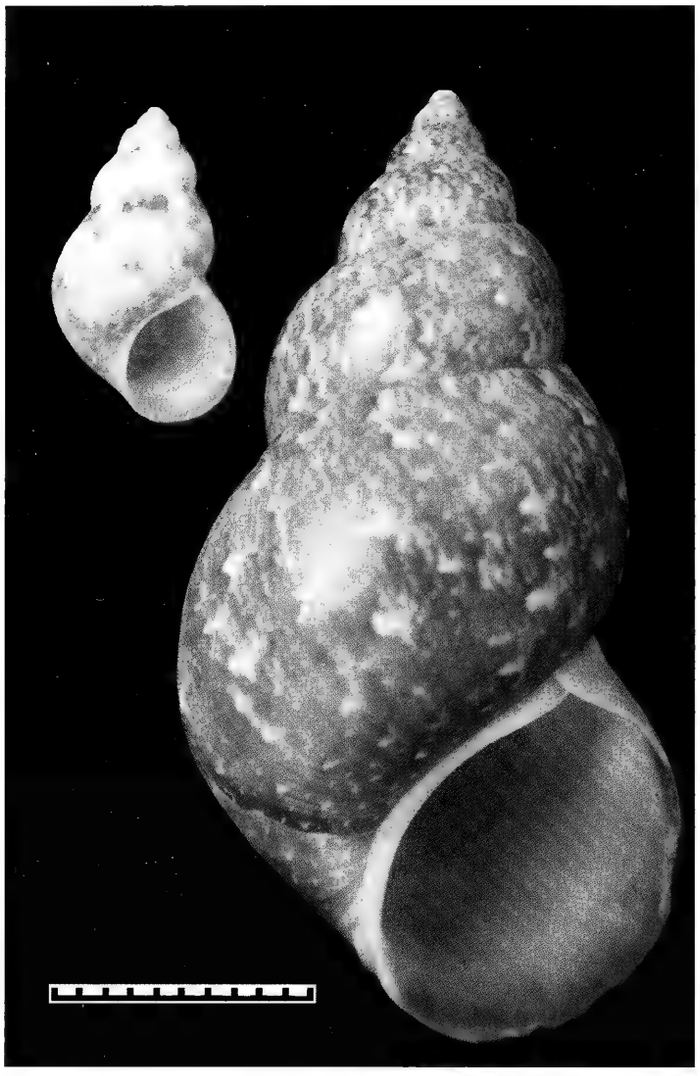


Plate H. Largest observed *P. solida* shells are from Mozambique (lower right) and the smallest from Samoa, mm scale.

species - numerous isolated endemic clades, some separated by as little as 180km.

Names considered here to belong in the *P. solida* complex in chronological order (with localities) are given in Table 3. Many of these names and perhaps others will probably be needed ultimately for each localized form, subspecies, or species.

Phasianella and *Tricolia* nomenclature have frequently been intertwined. For example, Poppe (2008: 264, pl. 77) illustrated in color six *"Tricolia"* shells and two living animals from the Philippines. All but one show spiral capillary lines and hence belong in *Phasianella*. His *Tricolia fordiana* (Pilsbry, 1888) (fig. 2, not 3) is correctly identified and is a first record in the Philippines. *"T." modesta* belongs in the *P. solida* complex. He stated that "the Pacific *Tricolia* are in need of revision," evidently being unaware of Robertson (1985). The *T. variabilis* complex also occurs in the Philippines.

The genus *Phasianella* has been a dumping ground for quite different fossil and some living species. Research already begun on *Tricolia* and trochoideans could and should be extended to *Phasianella*: 1. scanning electron microscope (SEM) studies of protoconchs and adult shell microsculptures, 2. life histories: eggs, larval development, settlement and metamorphosis, 3. sperm ultrastructure (transmission electron microscopy), 4. adult animals (living and preserved): external morphology (cirri, etc.) [pl. A], comparative internal microanatomy and functional morphology, 5. radulae: ontogeny and functional morphology studied and illustrated using various techniques, 6. adult ecology, foods and feeding, 7. effects of different foods on shell colors and sculptures, and 8. molecular and cladistic studies of species and populations.

Ideally, a molecular geneticist cum microanatomist should be supported with millions of dollars to stay in one idyllic place after another throughout the Indian Ocean and South Seas to seek The Truth about *Phasianella* and *Tricolia.*

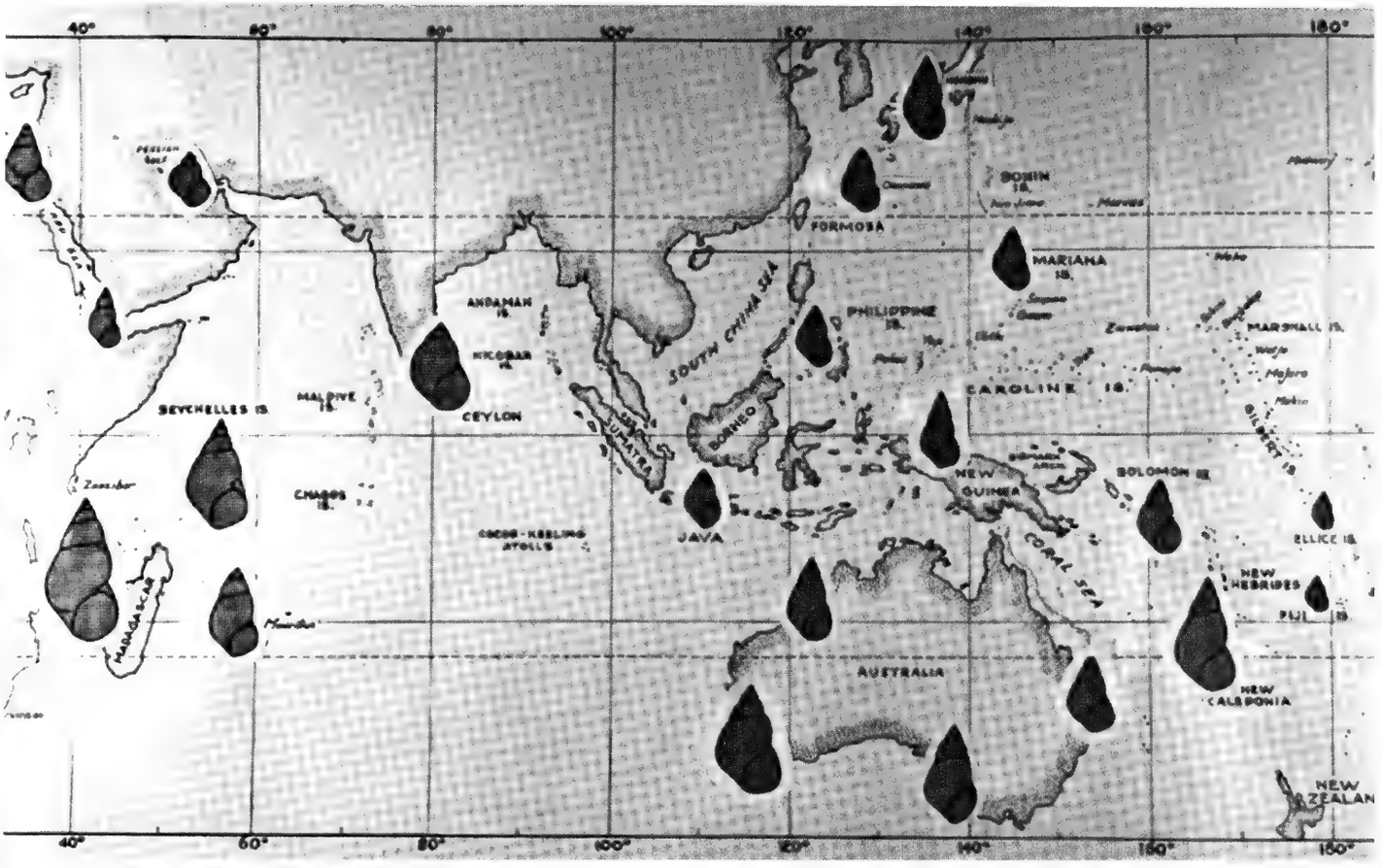


Plate I. Map of Indo-West Pacific showing geographic variation in maximum observed shell sizes in the *P. solida* complex (including *P. angasi* in South Australia). They are all outlined at the same scale and are definitely adults (thousands of shells were studied).

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Table 1. Synonyms of *Phasianella australis* (Gmelin, 1791). From Western Australia east along the southern coast to Victoria and Tasmania. Gmelin's type locality of New Zealand rivers is in error.

1. *Helix phasianus* Röding, 1798
2. *P. variegata* de Roissy, 1810
3. *Bulimus phasianus* Perry, 1810
4. *Trochus phasianella* ? Brookes, 1815
5. *P. varia* Lamarck, 1816
6. *P. bulimoides* Lamarck, 1822
7. *P. picta* de Blainville, 1825
8. *P. tritonis* Anton, 1838 ["1839"]
9. *P. lehmanni* Menke, 1843
10. *P. preissii* Menke, 1843
11. *P. venusta* Reeve, 1848
12. *P. decorata* Chenu, 1859
13. *P. pulchella* Tenison-Woods, 1878 (not Récluz, 1843)
14. *P. delicatula* Tenison-Woods, 1878
15. *P. australis* Gmelin var. *subsanguinea* Pilsbry, 1888
16. *P. marchei* Mabille, 1888 (wrongly Philippines)

Table 2. Synonyms of *Phasianella ventricosa* Swainson, 1822. All southern Australia.

1. *P. inflata* Swainson, 1822
2. *Turbo (Phasianella) perdix* Wood, 1828
3. *P. articulata* Anton, 1838 ["1839"] (type wrongly labeled "Oceania")
4. *P. brevis* Menke, 1843 (not d'Orbigny, 1842)
5. *P. turgida* Philippi, 1853
6. *P. delessertii* Chenu, 1859
7. *P. sanguinea* Reeve, 1862
8. *P. zebra* Reeve, 1862
9. *P. venosa* Reeve, 1862
10. *P. reticulata* Reeve, 1862
11. *P. peroni* Mabille, 1888

Table 3. Names for forms, subspecies or species in the *Phasianella solida* complex from numerous tropical Indo-West Pacific localities.

1. *Helix solida* Born, 1778 (locality?) [Pl. G]
2. *P. variegata* Lamarck, 1822 (not de Roissy, 1805 [not in Sherborn]) (Australia [tropical])
3. *P. rubens* Lamarck, 1822 (Australia [tropical])
4. *Tricolia brongniartii ["brongnartii"]* Audouin, 1826 (Egypt)
5. *Turbo varius* Wood, 1828 (not *P. varia* Lamarck, 1816) (Sri Lanka?)
6. *Turbo (Phasianella) lineolatus* Wood, 1828 (Mauritius)
7. *P. viridis* Anton, 1838 ["1839"] (locality?)
8. *P. unifascialis* Kiener, 1847 (Australia [tropical])
9. *P. flammulata* Philippi, 1848 (Pacific Ocean or Red Sea?)
10. *P. splendida* Philippi, 1849 (Red Sea)
11. *P. grata* Philippi, 1853 (Madagascar)
12. *P. aethiopica* Philippi, 1853 (East Africa, Zanzibar, etc.)
13. *Eutropia modesta* Gould, 1861 (Ryukyu Is.)
14. *P. nivosa* Reeve, 1862 (Sri Lanka and Philippines)
15. *P. fulgurata* Reeve, 1862 (Australia [tropical])
16. *P. jaspidea* Reeve, 1862 (Zanzibar)
17. *P. histrio* Reeve, 1862 (Philippines)
18. *P. lentiginosa* Reeve, 1862 (W. Australia)
19. *P. graeffei* Dunker, 1871 (Samoa Is.)
20. *P. wisemanni* Baird, 1873 (Vanuatu)
21. *P. (Orthomesus) modesta* (Gould) var. *gouldii* Pilsbry, 1895 (Japan)
22. *P. montebelloensis* Preston, 1914 (N.W. Australia)
23. *P. zigzag* Odhner, 1919 (Madagascar)
24. *P. caloundra* Iredale, 1927 (Queensland, Australia)

June Huie, a member of the North Texas Conchological Society for 35 years, and a charter member, died March 25, 2010 after a short illness. She was 86 and serving as newsletter editor and program chairman for the club. June began collecting shells in the 1940's. She knew each shell she had by scientific name and shared her knowledge with others by always holding a club office, giving programs, and helping us with species identification. June was a long time member of the Conchologists of America and loved going to conventions, jamborees, and shelling trips. She will be missed as a friend and fellow shell collector.

Ardeth Hardin

What goes around comes around; Jacksonville Shell Club to fund annual COA Academic Grant

Harry G. Lee

On June 22, 1959, the first meeting of what was to become the Jacksonville Shell Club was held in the home of Mr. and Mrs. Larry Hedgecoth. The event resulted from an article by staff writer Nancy Campbell appearing in the Florida *Times Union* on April 26 of that year. Nancy reported on the shelling exploits of Jacksonville resident Gertrude Moller while she and her family lived on Eleuthera, in the Bahamas. As a result of the publicity, nine individuals contacted Gertrude inquiring about shells. One of the callers was Harriet Hedgecoth, who volunteered to host a get-together of all the interested parties, and who also provided refreshments and a slide show on that sentinel occasion. The rest is history, repeated on fourth Thursdays and extending beyond a golden anniversary last year. The meetings were held in member's homes initially but were soon moved to various locations in the Jacksonville area as membership grew from the original 10 to 20. In January 1960, the group officially became the Jacksonville Shell Club with 20 Charter Members, and Larry Hedgecoth was elected its first President. In October 1959, volume 1 no. 1 of the club's official organ, the *Shell-O-Gram*, came off the (mimeographic) press, and this journal has continued, moving from a monthly to a bimonthly publication in 1983 to the present day essentially without interruption.

The club presented its first shell show at the Lion's Club building at 20th and Main Street in downtown Jacksonville in July, 1962. With the effort of the membership and Dr. William Clench, Curator of Mollusks at the Museum of Comparative Zoology, Harvard University, the show was deemed a success. The Jacksonville Shell Club was incorporated under Florida statute in 1964 and in May 2009 was recognized as tax-exempt educational organization under the provisions of Section 501(c)(3) of the Internal Revenue Code.

From its inception the club has held education as principal in its mission. Aside from the nearly annual shell shows, the 44th being held on May 28-30, 2010, members have participated in various other public exhibitions, spoken to civic organizations and schools, operated booths at various festivals and local events, sponsored field trips, participated in curatorial and field work with scientists, and donated material and volunteer services with scientific and educational institutions including the Florida Museum of Natural History and the Bailey-Matthews Shell Museum. In the 1980's the club began to provide grant support for students showing an aptitude for and an interest in malacology. Past scholarship winners include Dr. Paula Mikkelsen of the Paleontological Research Institution (then at Florida Institute of Technology) and, while at Jacksonville University, Debi Ingrao, recently retired from Mote Marine Lab, Sarasota, Florida. Most years, however, we were unable to grant an award because the coffers just weren't ample enough.

An abiding goal for the club was the creation of a thorough inventory of the marine mollusks of the Jacksonville region based on our own primary research. This special collaboration involving several dozen club members and a few others began in 1975 and culminated last year with the publication of *Marine shells of northeast Florida* (Lee, 2009a, b). To forward this campaign, we received an Academic Grant from the COA in 1990. In large part due to the proceeds from the sale of this book, the Jacksonville Shell Club is now in a financial position to embellish and formalize its commitment to the support of education and research in malacology. Considering COA's past assistance to our club and the current arrangement for joint philanthropy as expressed by Chairman Donald Dan, the club has decided to endow a COA annual Academic Grant ($10,000). This stipend is expected to be a perennial award in support of graduate or postgraduate studies in malacology, particularly work focusing on taxonomy and organismic studies of the fauna of our region. Our only charter member, Gertrude Moller, was among those casting votes in the unanimous support of this initiative. She can tell you better than anyone that we've come a long way in this half century.

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2010 SHELL SHOWS & RELATED EVENTS (August – December)

Following information is subject to change. Please verify with individual organization

Aug. 20-22 2010 — **JERSEY CAPE SHELL SHOW**, Stone Harbor, New Jersey
The Wetlands Institute, Stone Harbor
Karen Lelli e-mail: kjlelli@comcast.net
(856) 691-5831

Aug. 27-31 2010 — **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** Boston, MA
The Boston Park Plaza Hotel, 50 Park Plaza & Arlington Street
Don Robak (617) 889-1841 E-mail: shellsnail@comcast.net
Warren Graff (978) 749-3351 E-mail: wgraff@vicr.com
Web site: www.conchologistsofamerica.org

Sept. 18-19 2010 — **31st INTERNATIONAL SHELLS & FOSSIL BOURSE,** Ottmarsheim, France
Salle Polyvalente, Rue de la Priscine
Michel Rioual, 2 Rue des Vergers
68490 Ottmarsheim, France (3) 89-26-16-43

Sept. 24-26 2010 — **NORTH CAROLINA SHELL SHOW,** Wilmington, NC
Cape Fear Museum of History & Science
814 market Street
Ann Buddenhagen, 618 Crabbery Lane
Raleigh, NC 27609 (919) 787-7103
E-mail: abuddenhagen@nc.rr.com

Sept. 25-26 2010 — **ANNUAL GERMAN SHELL FAIR**, Oehringen, Germany
KULTURA Hall, Herrenwiesenstr. 12
Kurt Kreipl, Hoehenweg
D-74613 Oehringen-Cappel, Germany
E-mail: meeresmuseum@t-online.de
Tel. (7941) 62-826

Oct. 9 -10 2010 — **PHILADELPHIA SHELL SHOW,** Philadelphia, PA
Academy of Natural Sciences, Parkway & 19th St.
Paul Callomon, Academy of Natural Sciences
Parkway & 19th St., Philadelphia, PA 19103
(215) 299-1159
E-mail: callomon@ansp.org

Date to be confirmed — **SEA SHELL SEARCHERS SHELL SHOW**, Lake Jackson, TX
Brazosport Museum of Natural Science
400 College Blvd., Clute, Texas 77531
Patty Humbird, Tel. (979) 265-1320
Wanda Coker, Tel. (979) 297-0852
Email: shellclub@earthlink.net

Oct. 30 2010 — **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** Essex, England
Theydon Boys Community Centre, Theydon Boys, Epping, Essex
Tom Walker, 38 Redlands Road
Reading, Berkshire RG1 5HD, England 44 (118) 987-4294
E-mail: tom@tmwalker.co.uk

Oct. 30 2010 — **SYDNEY SHELL SHOW,** Sydney, Australia
Show contact:
Steve Dean, 166 Narabeen Pk Pde
Mona Vale, NSW 2103 61 (2) 9979-9536
E-mail: steve@easy.com.au

Nov. 13-14 2010 — **XV PRAGUE INTERNATIONAL SHELL SHOW,** Prague, Czech Rep.
KULTURNIDUM LADVI Buresova 1661, Prague 8
Jaroslav Derka, Holeckova 51/370
15000 Praha 5, Czech Republic
42 (2) 5731-6246
Email: jderka@volny.cz http://cksl.webpark.cz http://shells.webz.cz

DONALD DAN, COA Awards Chairman
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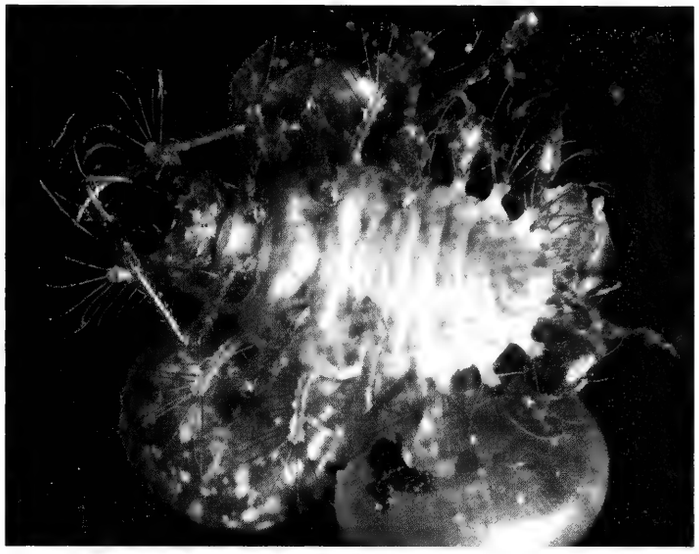
E-mail: donaldan@aol.com SH-DATE2.2010 April 13, 2010

The World's Smallest (and Probably Ugliest) Shell Collector

Tom Eichhorst

Dorsal view of the 7mm green lacewing larva found by David Kirsh in Mayo River State Park. In this view you can barely see the insect for the shells. All of which appeared empty.



Ventral view of the green lacewing larva. In this view you can see the business-like jaws that make this insect such an effective predator. Both images by David Kirsh.

In April 2010, COA member David Kirsh collected a small insect larva that had a number of even smaller land snails attached to its body. The 7mm larva was found under dead leaves and ground debris near a stream in Mayo River State Park, Mayodan, Rockingham County, North Carolina. The attached snail shells were approximately 3mm or smaller. This was certainly something David had not previously seen and he was quick to get photographic evidence of this 7mm shell collector.

The larva was subsequently identified by Dr. Raymond J. Pupedis of the Peabody Museum of Natural History at Yale University, New Haven, Connecticut, as a green lacewing larva - family Chrysopidae (order Neuroptera). This is a large insect family with up to 2,000 species in 85 or more genera (a number that varies with author, as does the assignment of genera). They are especially prevalent in Europe and North America. Most specimens encountered in the temperate region are relatively small with a wing span of about 10-20mm, but tropical green lacewings can have a wing span of 65mm. In the larval form they are voracious predators and are sold commercially in the US for aphid (and other small garden pests) control. A quick check online showed a price of $15 for 1,000 green lacewing eggs.

So what was it doing with land snails attached to its back? Apparently the family Chrysopidae is known for the larval stage attaching small items, such as pieces of leaves and ground debris, lichens, and insect parts to their body. This habit has earned it the nickname, "junkyard bug." Whether this is done for camouflage, protection, or some other reason is unknown.

David's encounter was not the first recorded instance of a snail-collecting green lacewing. In the first issue of the *Appalachian Highlands Science Journal* is a article describing a similar finding in the Great Smokey Mountains National Park, North Carolina. While studying land snail diversity, Dan Dourson found green lacewing larva with six different land snail species attached, including: *Punctum vitreum* H.B. Baker, 1930 (a new record for the area); *P. minutissimum* (Lea, 1841); *P. blandianum* Pilsbry, 1900; *Gastropocta pentadon* (Say, 1821), *G. contracta* (Say, 1822), and *Carychium clappi* Hubricht, 1959. The *G. pentadon* was still alive, maybe answering a question about snail predation by the green lacewing larva.

Now back to the specimen found and photographed by David Kirsh. He showed his images to our own Dr. Harry G. Lee, who promptly identified the shells as juvenile *Glyphyalinia wheatleyi* (Bland, 1883). Much of this story can be found on line at the Jacksonville Web Site at: http://www.jaxshells.org/mare20.htm. There are also a number of references provided by Dr. Harry Lee about predation of various mollusk species by insects (including one that lists a predatory butterfly caterpillar!).

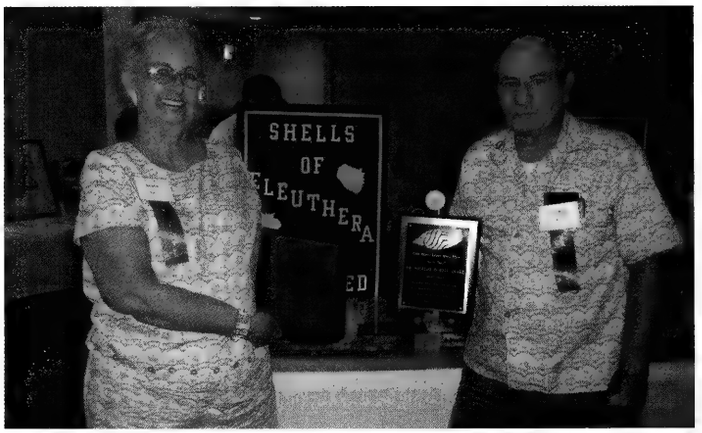
To have an interest in conchology is to appreciate the shiny perfection of a golden cowrie (*Cypraea aurantium* Gmelin, 1791), or even the ever-changing taxonomy that lists the same species as *Lyncina aurantium* (Gmelin, 1791). Similarly, the spiny perfection of a Venus comb murex (*Murex pecten* Lightfoot, 1786) or the bright colors and intricate sculpture of a specious scallop (*Gloriopallium speciosum* (Reeve, 1853)) are indeed wonders to behold. David Kirsh found the wonder of conchology (as well as natural history in general) on a small insect under a leaf in North Carolina.

"It is perhaps a more fortunate destiny to have a taste for collecting shells than to be born a millionaire."

Robert Louis Stevenson (1850-1894)

Jim & Bobbi Cordy Take the COA Award at the Marco Island Shell Club Shell Show (Plus a Few Others)

Jim and Bobbi Cordy have collected shells at least twice a year on Eleuthera Island for the past 16 years. With other members of the Astronaut Trail Shell Club, they travel hidden beaches and seldom visited areas. The result of this is a truly superb Caribbean shell collection seen recently in their 40-foot exhibit of "Self Collected Shells of Eleuthera," which took the COA and other awards at 2010 shell shows.



Above: Jim (looking very happy) and Bobbi Cordy with two of many awards they won in 2010.
Below: The football-sized West Indian chank shell (*Turbinella angulata*) that took best of show.

At the **Space Coast Seashell Festival** they won the R. Tucker Abbott Award for Best Florida/Caribbean Exhibit. At the **Broward Shell Show** they won the DuPont Trophy and the Van Kunnon Memorial Award for best Caribbean exhibit. At the **St. Petersburg Shell Show** they won the Florida Museum of Natural History Platinum Award and the Dorthy Hansler Award for best Caribbean exhibit and they took Shell of the Show with a very large and seemingly perfect chank shell (*Turbinella angulata* (Lightfoot, 1876) - see the image at right). At the **Marco Island Shell Show** they won the COA Trophy and the Dr. William Reid Trophy for best Florida/Caribbean exhibit.

It looks like they are on a roll. Contact for the Marco Island Shell Club is Margaret Cook at 394-7022. The club meets the 1st Tuesday of the month at 8:00 p.m. (November thru May) at First Methodist Church, 350 S.Barfield Avenue, Marco Island, FL.

St. Petersburg Shell Club 63rd Annual Shell Show 27-28 Feb 2010

After 74 years of existence and 63 annual shell shows, it appears the folks in St. Petersburg, Florida, really know how to put on a shell show (the club was founded in 1936 and incorporated in 1968). They had lots of exhibitors and crowds of interested spectators at "one of the best shows ever." This year's show had four judges. Scientific judges were: Dr. Gary Schmelz and Marcus Coltro. Artistic judges were: Debbie Freeman and Lynn Gaulin. After careful scrutiny of the numerous displays, they decided on the following awards:

MAJOR:
CONCHOLOGISTS OF AMERICA AWARD -- Martin Tremor, Jr (The Helmets and the Bonnets of It All)
DUPONT AWARD -- Dale Stream (Fossil Shell of the Okeechobean Sea)
NATIONAL MUSEUM OF NATURAL HISTORY AWARD -- Martin Tremor, Jr. (The Helmets and the Bonnets of It All)
FLORIDA MUSEUM OF NATURAL HISTORY PLATINUM -- James & Bobbi Cordy (Self Collected Eleuthera Island)

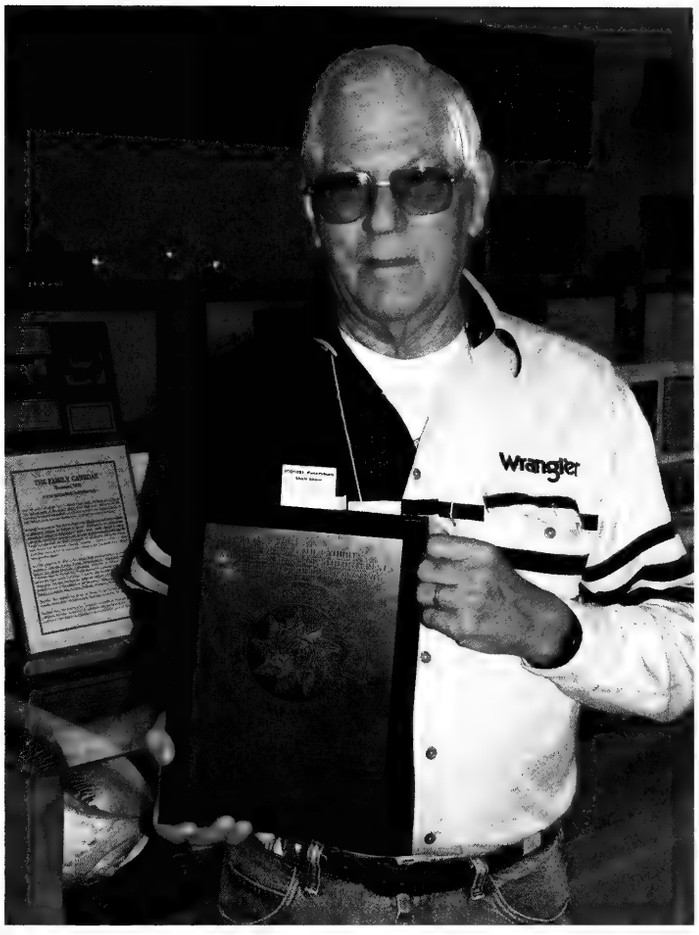
MINOR:
FLORIDA/CARIBBEAN DOROTHY HANSSLER AWARD -- James & Bobbi Cordy (Self Collected Eleuthera Island)
SELMA LAWSON MOST BEAUTIFUL AWARD -- Martin Tremor, Jr. (The Helmets and the Bonnets of It All)
BEST SMALL SCIENTIFIC -- Wayne & Patti Humbird (Dye Murex)

EARL CLARK BEST ARTISTIC AWARD -- Cheryl Whitten (Victorian Pearl)
SHELL OF THE SHOW SELF COLLECTED -- James & Bobbi Cordy (*Turbinella angulata*)
SHELL OF THE SHOW COLLECTED ANY MANNER -- Dale Stream (*Cymatium floridana*)

Judges Special Awards:
Scientific:
Carolyn Petrikin -- World Record *Mercenaria mercenaria*
Martin Tremor, Jr. -- Hawaiian *Cassis cornuta*

Artistic:
Brandy Llewellyn -- Yesteryears
Wendy Marshall -- Song of the Sea

Shell show president Martin E. Tremor Jr. wishes to thank all judges, participants, and exhibitors. Meetings are held on the second Friday of the month (except in March when it is on the third Friday) from September to May at the Seminole Recreation Center located at 9100 113th Street North Seminole, Fl 3772. The meeting starts at 7:00 P.M. and the public is invited.



Right: Martin E. Tremor Jr., winner of the COA Award for "The Helmets and the Bonnets of It All."

Oregon Society of Conchologists Shell Show 23-25 April 2010

The Oregon Society of Conchologists held their shell show at the Oregon Museum of Science & Industry. A superb facility and a perfect venue for the shell show, which could hardly have gone better, lots of great shells on display and lots of people interested in them. This year's COA Award went to Valerie K. Moore from Vancouver, Washington. Her exhibit was titled "What is a Bivalve," and proved both educational and artistic.

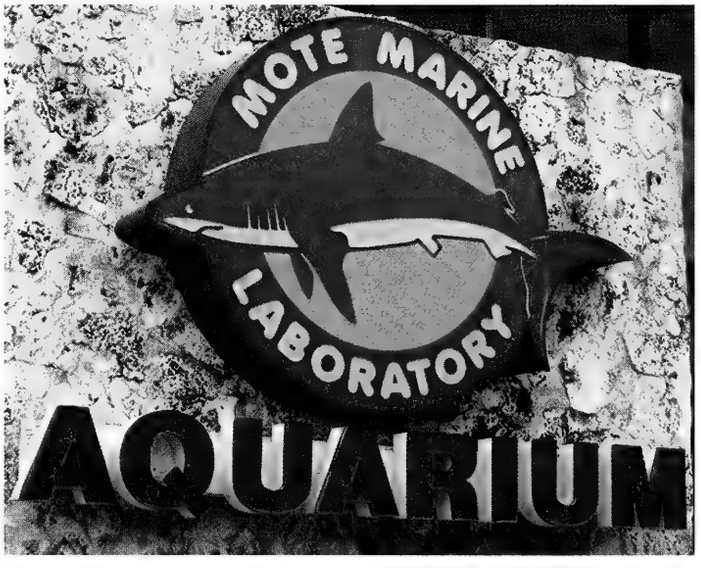
The Oregon Society of Conchologists, a non-profit organization, has about 70 members and was founded in 1965. Monthly meetings are held at various locations in northwestern Oregon and are open to anyone interested in studying and collecting seashells. Contacts for the club are: Donna Saffir, President, dragonzs@comcast.net (503) 297-3009 or Joyce Matthys, joycematthys@aol.com

Sarasota Shell Club Shell Show
12-14 February 2010

The Sarasota Shell Club was started to bring together people interested in shells from Sarasota, Manatee, and Charlotte Counties. This year's shell show was the club's 47 annual show. As usual there was great participation, lots of really beautiful shells and friendly folks, and shell displays that were both educational and nice to look at. This year's event was held at the Sarasota Municipal Auditorium, located at 801 N. Tamiami Trail, Sarasota, FL. The shell show chairperson was Peggy Williams and the scientific judges were Dr. Ed Petuch and Robert Lipe.

The COA Award was won by Martin E. Tremer Jr. of St. Petersburg, Florida. His 14 case, 32 foot display was titled, "A Display of Trumpets and Tritons of the World." Martin also took the DuPont Trophy for his display titled "Helmets & Bonnets." Jeanette Tysor won the Mote Gold Award for her display, "Staying Alive." The "Shell of the Show" was a perfect specimen of *Chicoreus hilli* Petuch, 1990, displayed by Lynn Gaulin. The fossil "Shell of the Show" was *Strombus mayacensis* Tucker & Wilson, 1933. There were almost 1,300 paid attendees at this year's show.

The Sarasota Shell Club meets on the second Thursday of each month from **September** through **April**. The agenda includes a program of interest to shell collectors and a short business meeting. Meetings start at 7:00 p.m. and are held at the Mote Marine Laboratory, 1600 Ken Thompson Parkway, 3rd floor - Buchanan Room, Sarasota, Florida. Contact is info@sarasotashellclub.com



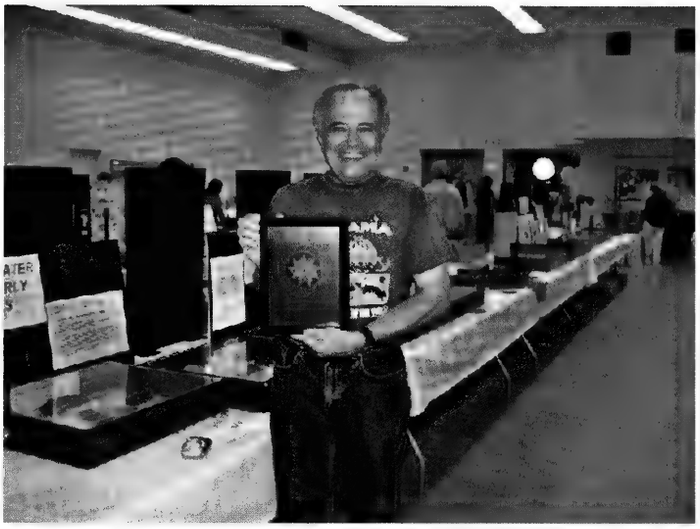
Right: Because Martin is pictured for his win at the St. Petersburg Shell Show (and because I only received the single image), images of the Mote Marine Laboratory will have to suffice.

Sanibel-Captiva Shell Club Shell Show
4-6 March 2010

The 73rd annual Sanibel-Captiva Shell Club Shell Show was held at the Sanibel Community Center in Sanibel, Florida. This is one of the nation's larger shell shows and exhibits and the admission fees are used to fund research scholarships. This is the only shell club to fully fund a student through graduate school into a PhD program at the University of South Florida, St. Petersburg. Founded in 1963, the club presently has 100 members. Contact for the Sanibel-Captiva Club is sanibelchiton@aol.com

This year's show met the high standards of this club, with superb exhibits and lots of attendees. Winner of the COA Award was Patricia Linn with her three case exhibit titled "Shells of Caladesi and Honeymoon Islands, FL." Her purpose was to educate the public about shelling on the island beaches in this state park. It obviously garnered some attention as judges Dr. Henry Chaney and Paul Callomon presented Patricia the COA Award.

Broward Shell Club Shell Show
23-24 January 2010



Left: Alan Gettleman with his richly deserved COA Award. Maybe only Alan could design a display of U.S. freshwater mussels that would take not only the COA Award, based on the judges evaluation, but also garner the People's Choice Award. Congratulations Alan.

The Broward Shell Club, Broward County, Florida, was established in 1962 and has pretty much been a mainstay of US shell clubs ever since. Meetings are held the 2nd Wednesday of every month at the Emma Lou Olson Civic Center, 1801 N.E. 6th Street, Pompano Beach, Florida (call 954-786-4111).

The 45th annual Broward Shell Club Shell Show was a tremendous success with some truly spectacular exhibits. The COA Award went to Alan Gettleman for his display titled "Freshwater U.S. Pearly Mussels." He also won the People's Choice Award (as voted by attendees). That ought to quiet the crowd who think our native mussels are just "brown and boring" shells. There were any number of worthy exhibits and those that received awards are listed here. Of special note were two exhibits. One was by Linda Sunderland, titled "Earthenware Molasses Can." Linda's exhibit won the first ever Fay Mucha Memorial - Best Collectibles Trophy. As covered in the December 2009 issue, Fay (who contributed uncounted photos to this publication) passed away in October 2009. The other exhibit of note was of "Cuban *Polymita*" by Archie Jones. He won the Len Hill Memorial Trophy with his colorful display, but sadly passed away not a month later (reported in the March 2010 issue). Below are listed the various awards and award winners.

Major Trophies

AMERICAN MUSEUM OF NATURAL HISTORY AWARD - Lillian Shin "Historical Review of the South Florida Tree Snail *Liguus fasciatus*"

CONCHOLOGISTS OF AMERICA TROPHY - Alan Gettleman "Freshwater U.S. Pearly Mussels"

The DuPONT AWARD - James and Bobbi Cordy "Shells of Eleuthra. Self Collected"

The "BEST OF THE BEST" Trophy - Gene Everson "Shells of Masirah Island, Oman"

Other Trophies & Sponsors

LEN HILL MEMORIAL TROPHY – Archie Jones "Cuban *Polymita*"

JIM VUNKANNON MEMORIAL BEST FLORIDA / CARIBBEAN TROPHY - James and Bobbi Cordy "Shells of Eleuthra. Self Collected"

NEIL HEPLER MEMORIAL TROPHY FOR EDUCATIONAL EXCELLENCE – Lillian Shin "Historical Review of the South Florida Tree Snail *Liguus fasciatus*"

SHELL OF SHOW - Self Collected – Bobbi Cordy "Left Handed Morum oniscus"

SHELL OF SHOW - Any Manner – Alan Gettleman "Extinct Mussel"

BEST SEA LIFE EXHIBIT TROPHY – Jonathan Galka – Panamanian Seabeans"

BEST STUDENT EXHIBITOR TROPHY – SCIENTIFIC – Valentino Leidi "Self Collected South Florida Shells"

BEST BEGINNING EXHIBITOR – SCIENTIFIC – Tom Ball "Buying Shells On Ebay"

PEOPLE'S CHOICE AWARD – SCIENTIFIC - (As voted by the attendees) Alan Gettleman

Artistic Division

BEST IN SHOW TROPHY – PROFESSIONAL - Luis Miguel Rodriguez – Painting

BEST IN SHOW TROPHY – SAILOR'S VALENTINE (any manner) - Brandy Llewellyn "Yesteryears"

FAY MUCHA MEMORIAL - BEST COLLECTIBLES TROPHY – (any manner) - Linda Sunderland "Earthenware Molasses Can"

BEST BEGINNING EXHIBITOR ARTISTIC – Bob Pace – Caricatures "Animals of the Everglades"

PEOPLE'S CHOICE AWARD - ARTISTIC DIVISION - (As voted by the attendance) Heather Strawbridge

Last Call for Shell-ebration Boston!

Join in the celebration of the Conchologists of America 2010 Convention in Historic Boston, Massachusetts, and help observe the 100th year of the Boston Malacological Club. Convention dates are August 27th through August 31st, with pre-convention tours August 26th and 27th.

The host hotel is the Boston Park Plaza, located in the heart of downtown Boston. Minutes from Logan International Airport, the hotel is also close to many of Boston's finest attractions. The Boston Park Plaza has 941 recently renovated rooms, five in-house restaurants and many other amenities, and is the most affordable venue for downtown Boston. Reservations can be made by calling (617) 426-2000 or (800) 225-2008 and you must mention 'COA' to receive the convention rate (which will be honored 3 days prior and 3 days after the convention dates), or use the website http://www.starwoodmeeting.com/Bookcac0826. The special website address is to reserve the regular state rooms. If a suite or some other type room is desired, use the hotel's regular website address, http://www.bostonparkplaza.com.

NOTE: The Boston Park Plaza has reduced the convention rate of the hotel staterooms to $169 plus 14% tax, a savings of $30 from the original rate of $199 per night. In addition, the entire room block has been upgraded to deluxe guestrooms with complimentary internet access. Also, COA officers and your Boston-based club request that you make reservations by using the Boston Park Plaza hotel contact information (phone number or special link) and NOT travel sites such as Expedia or Travelocity. In order to be financially feasible, as in all COA conventions, COA must meet certain contract-related goals with the hotel, and booking through outside sources does not give credit to COA toward meeting these goals.

Logan Airport is about six miles from the hotel and costs approximately $25-$35 by taxi. There is no hotel shuttle, but independent shuttles cost $14 per person and are available by calling the Park Plaza concierge service. Note: as in other cities in the northeast corridor, **parking is expensive in Boston and is typically at least $20 or more for 24 hours.** The Park Plaza does not have its own lot, but there are several private lots nearby; see the registration insert for details on parking options. **Special temporary parking arrangements will be made for bourse dealers for loading/unloading at the setup and take down times.** For those of you planning to drive, directions to Boston and the hotel will be provided in the registration insert.

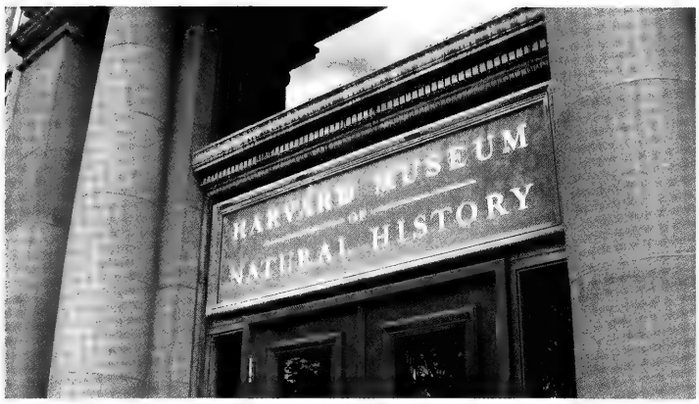
Shellebration BOSTON

The convention schedule will start with pre-convention tours on Thursday, August 26th and continue with a.m. tours Friday, August 27th; see details on these tours below. Registration will begin Friday morning, and the convention opening will be at 1 p.m., with the welcoming party Friday evening. Registration will continue Saturday, August 28th and the COA annual meeting will be held in the afternoon with the oral auction that evening. Sunday, August 29th and Monday, August 30th will consist primarily of programs; dealers' bourse setup will be Monday in the morning, with the bourse opening at 1 p.m. that afternoon. The bourse will conclude Tuesday morning August 31st and the farewell banquet will be held that evening. Silent auctions, raffles, and door prizes will be conducted daily as in the past and the detailed schedules for these will be available in your registration packets.

Come early and you will be able to enjoy three field trips on Thursday and two on Friday morning before the official convention opening ceremony. Here are the field trips planned for Thursday August 26th; see the insert for details on departure times, duration, and cost.

Historic Concord, Mass. Tour the location of the start of the American Revolution. Located 16 miles west of Boston, Concord was home to Ralph Waldo Emerson, Henry David Thoreau, and Louisa May Alcott. The tour will comprise visits to the Old North Bridge, the Alcott House, the Concord Museum, and the Concord Library, which houses an exhibit of the Shells of Concord, collected by Boston Malacological Club member Kristina Joyce. Through careful planning and preservation efforts, much of Concord still looks as it did in revolutionary times.

Harvard Museum of Natural History, Cambridge, Mass. Tour the fabulous collections, including the Mollusk Department, Mineral Exhibit (deemed one of the best in America), the Great Hall of Mammals, and the famous Exhibit of Glass Flowers.



Shelling Trip. Although not as bountiful as a Florida mud flat, shelling can be productive on the beautiful east coast beaches of the Massachusetts, particularly north of Boston. The trip is planned for either or both of two such locations, Nahant Beach in Lynn, and Revere Beach. Several of our New England shell experts from the Boston club will host this trip. A stop at the famous Kelly's Restaurant, a Revere Beach staple since 1951, is planned for lunch.

Field Trips scheduled for Friday morning August 27th include the Boston Duck Tour and the U.S.S. Constitution and museum. See the convention insert for details on departure times, duration, and cost. Both tours will return in time to get lunch and make the convention opening ceremony.

Boston Duck Tour. A great way to see many of Boston's famous sites and places, the Boston Duck Tour is in W.W.II style amphibious landing vehicles. The tour takes about 90 minutes and includes a tour guide and a short water excursion providing a wonderful skyline view of the city. You will see the Boston Public Garden, Massachusetts State House and Beacon Hill, the Old State House, Faneuil Hall and Quincy Market, Bunker Hill Memorial, and the USS Constitution, to name a few. Take a virtual tour from this link below and crank up the volume! http://www.bostonducktours.com/tour_video.html

U.S.S. Constitution and Museum. You will go aboard the oldest commissioned warship in the world. A veteran of the War of 1812, this maritime treasure has been restored to its original splendor. The 2-hour tour also includes a visit to the USS Constitution Museum; the ship and the museum are located in the Charlestown Naval Yard.

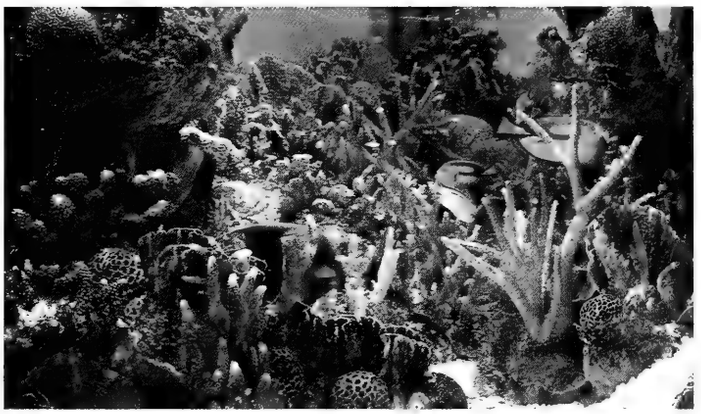
Other things to take in. There are many other worthwhile places and things to see in Boston. There was not enough time to schedule all of these as field trips, so for those coming early or staying late, here is a list we recommend for you to do on your own.

Faneuil Hall/Quincy Market complex. A short taxi ride from the hotel and close to the waterfront, this is the most visited tourist site in Boston. Originally a marketplace, these historic buildings were beautifully restored in the 1970's and house a myriad of restaurants, stores, and tourist item vendors. The Fanueuil Hall auditorium was used in the first protests against taxation and is still in use today.

JFK Library and Museum. Located in Dorchester, a Boston neighborhood, the JFK Library houses the papers and memorabilia of our 35th president.

Boston Public Garden. Only two blocks from the hotel, this beautiful and serene area is an oasis within the city. Don't forget to take a ride on the famous Swan Boats.

Top of the Pru and the Hancock Towers. Spectacular views of Boston and Cambridge can be seen from the top of both of these famous landmarks located just a few blocks from the hotel in Back Bay. The Prudential has an excellent restaurant, 'Top of the Hub.'



Other interesting places include a tour of **Fenway Park**, home of the Boston Red Sox, the **Paul Revere House** in Boston's North End, and the **New England Aquarium** on Boston's waterfront. The Park Plaza concierge can help arrange transportation to these venues.

Donations

Please donate shells and shell-related items that can be used for raffle items, silent auctions, or door prizes, as well as specimen-grade shells for the oral auction. Shell donations should include pertinent data (name and locality). Donations are tax deductible and help support COA grants and research. Financial donations are accepted as well and help offset the expense of awards and other convention necessities. Categories for Financial donations are:

Argentum	$10-$99
Aurantium	$100-$199
Diamantine	$200+

In order to be listed in the 2010 COA program booklet, donations must be postmarked no later than July 10th, 2010. All shell-related donations should be sent to Don Robak, 6 John St., Chelsea, MA 02150. Financial donations should be sent to Warren Graff, 18 Noyes Lane, Merrimac, MA 01860. **COA APPRECIATES YOUR SUPPORT!**

Living Fossils

Zvi Orlin

Above: A preserved coelacanth, *Latimeria chalumnae* Smith, 1939, caught off Grand Comoro in the Comoros Islands in 1974. In life this 'living fossil' (first discovered live by science in 1938) is blue with irregular light blue blotches. This specimen weighed 60kg and is 170cm long. It is on display in the Natural History Museum of Vienna, Austria. A second species, *L. menadoensis* Pouyaud, Wirjoatmodjo, Rachmatika, Tjakrawidjaja, Hadiaty, & Hadie, 1999 was discovered a decade ago in Indonesia. It is brown in color.

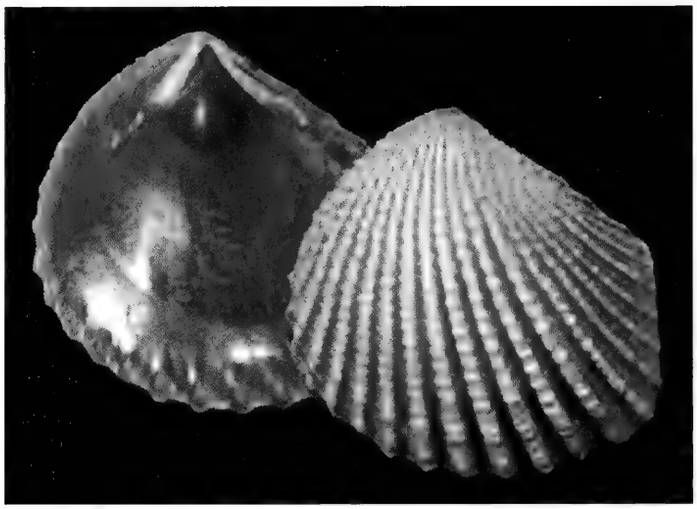
Right: The tuatara, on the right, is in the class Reptilia, but despite its appearance, it is not a lizard (order Squamata), but rather the sole surviving genus in the order Sphenodontia (two living species: *Sphenodon guntheri* (Buller, 1877) and *S. punctatus* (Gray, 1842)). The tuatara has been considered as endangered since 1895. This intriguing reptile is endemic to New Zealand where it is confined to 32 offshore islands that were free of introduced predators like the Polynesian rat and habitat loss caused by human development. It has recently been reintroduced to the mainland in a specially prepared sanctuary. Tuataras can live to be well over 100 years of age. Photo by Flicker user, Philippi C., on Wikipedia.com

When one sees the phrase 'living fossils' the first images that come to mind are probably the lizard-like tuatara (Sphenodontidae) of New Zealand or the fish *Latimeria* or coelacanth (Latimeriidae) of East African waters. Both can trace an evolutionary lineage to ancestors living some 200 million years ago (mya). As our dealings here are with mollusks, I would like to mention three families that are perhaps among the more interesting of the phylum, have an ancient lineage, and fit the 'living fossil' description. First it is important to clarify what we mean by the term 'living fossil.' Darwin was probably first to coin this phrase and it has been used and abused ever since. One of the more interesting definitions I have run across is, "the recent members of an extinct group of organisms." Despite the internal contradiction in that definition, it does portray the meaning. You can find dozens of definitions on line and in print. Wikipedia has maybe a half dozen definitions, of which it highlights:

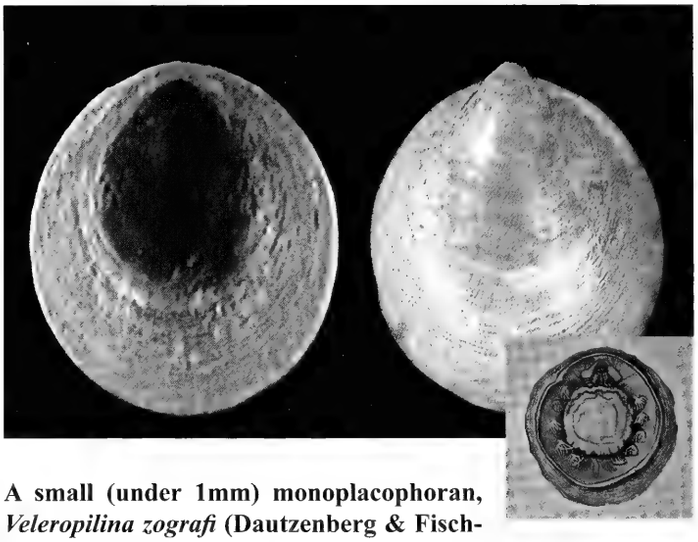
> **Living fossil** is an informal term for any living species (or clade) of organism which appears to be the same as a species otherwise only known from fossils and which has no close living relatives. These species have all survived major extinction events, and generally retain low taxonomic diversities. A species which successfully radiates (forming many new species after a possible genetic bottleneck) has become too successful to be considered a "living fossil."

Some authors (Stanley, 1978) believe this term should be dropped altogether. Despite the difficulties of definition, I have chosen here to use the phrase 'living fossil,' as it is popularly accepted.

The first 'living fossil' molluscan family I think worthy of mention is the bivalve family Trigoniidae, whose ancestors evolved during the Ordovician (about 450mya). Only two genera of this family survived the Cretaceous Mass Extinction (65mya). In the following Cenozoic Era the genus *Eotrigonia* became extinct, leaving *Neotrigonia* as the sole genus in this family to survive to modern times. *Neotrigonia* is found in the waters off Australia and there are only 5 (or 6, or 11, depending upon the author) Recent species. The species most generally agreed upon are: (*N. margaritacea* (Lamarck, 1804), *N. bednalli* (Verco, 1907), *N. lamarcki* (Gray, 1838), *N. gemma* Iredale, 1924, *N. uniophora* (Gray, 1847) and *N. kaiyomarumae* Habe and Nomoto, 1976 - this last is known only from a single specimen from off Western Australia. Each occupies a segment of the ring of shallow seas that encircle the continent. They have highly sculpted shells with prominent ridges or rows of knobs on the outer surface and unusual profiles of large (in relation to shell size) interlocking hinge teeth. They also have a highly muscular foot that enables them to burrow in sand more rapidly than other clams that inhabit the same sandy areas. In addition, these bivalves have a distinctive heel that facilitates leaping (like some cockles). These characteristics of fast burrowing and the ability to leap have probably kept them one step ahead of their predators. These species are popular with collectors because of their distinctive outer sculpturing and bright



One of the more commonly available broach shells, *Neotrigonia bednalli* Verco, 1907, 27mm, from 50 feet deep in sand in the Gulf of St. Vincent, South Australia. Broach shells have an ancient lineage and should not be dismissed as "just another small brown bivalve." In fact, a *N. bednalli* displayed by Sophie Ward at the 2009 British Shell Club Annual Shell Show won the Walter Karo Award for "Shell of the Show."



A small (under 1mm) monoplacophoran, *Veleropilina zografi* (Dautzenberg & Fischer, 1896) trawled at 500 meters, Fiumicino, Italy. It is easy to see why this shell, without the living animal, would be mistaken for a gastropod. Image courtesy of © Guido & Philippe Poppe - www.poppe-images.com The inset shows the living animal, including the pairs of ctenidia (gills), a structure more similar to chitons than to gastropods. Original image source unknown.

nacre interior. I am proud to mention that I had two specimens of *Neotrigonia bednali* in my shell collection, both from friends in Australia.

Next is a 'living fossil' that is also called a 'Lazarus taxon,' a clade that disappears in the fossil record for a period of time and then reappears as either a fossil or a Recent taxon (the coelacanth mentioned in the first paragraph also fits this definition). The fossil record of the order Monoplacophora showed they existed from the early Cambrian to approximately the mid-Devonian (550 - 380 mya), when they were thought to become extinct. Then in 1952, a Danish Biologist, Henning M. Lemche (1904 - 1977) discovered 10 living specimens of what he would eventually name *Neopilina galathea* Lemche, 1957, trawled while he was a member of the Galathea Expedition off the coast of Costa Rica at a depth of 3,590 meters. He described the specimens in the order Tryblidiacea - a monoplacophoran, thought extinct for 380 million years. Later more specimens were found at depths of up to 6000 meters, which certainly would account for them remaining undetected for so long. Once scientists knew what to look for they for they were able to identify other monoplacophorans that had been collected earlier but misidentified, usually as limpets. The earliest of these was perhaps *Veleropilina zografi* (Dautzenberg & Fischer, 1896), finally properly identified nearly 100 years later in 1983.

Monoplacophorans are found worldwide in the major oceans (including off Antarctica and in the Red Sea) and resemble limpets in outer appearance and chitons in several soft-body part characteristics, but are different from both, having a nacreous shell structure, a cap shaped protoconch, and serial multiplications of several organ systems. Extant species (of which over 20 have been named) feed on detritus in the cold waters in which they are found and some have been discovered to have symbiotic bacteria in the epidermis of their mantle. They have been termed a missing link between annelids and mollusks, but their anatomy suggests a strong relationship to modern chitons, despite the difference in shell morphology. Authorities differ on the exact placement and status of this group, but whatever the final outcome, they have certainly provided decades of excitement for some researchers.

Now we come to the third and what I believe are the most fascinating of our 'living fossils:' the family Nautilidae. The earliest nautiloids (class Cephalopoda) evolved in the Cambrian, the first period of the Paleozoic Era. They have thick shells for protection and the interior is sectioned off with calcareous partitioned chambers of liquid- and gas-filled space. In the partition between the chambers is a perforation permitting the passage of a porous tube called the siphuncle that includes blood vessels, nerves and other tissues. It joins the liquid filled chambers with the anterior living chamber. The amount of liquid is regulated by osmosis. If the salt content of the liquid is lower than that of the animal's blood, the osmotic gradient causes the liquid to flow through the blood into the body, leaving behind a gas-filled space. The role of the siphuncle is to control the gas and liquid content of the chambers. This creates a buoyancy organ, enabling them to hover weightlessly above the sea bottom and swoop down on their prey, or ascend from the ocean depths at night to feed near the surface. They are jet propelled predators, catching prey with their tentacles and biting off chunks of flesh with a parrot-like beak. The gas contained in the inner chambers is at a very low pressure and thus has an implosion depth limit at which the pressure of the sea could crush the shell. This means nautiloids could only submerge down to about 600 meters, but most probably lived up to about 300 meters in comparatively shallower depths. The shell system has a very slow growth rate and it can take up to 20 years for the animal to reach full adult size.

Fishes evolved in the Early Paleozoic, but were mainly found in freshwater lakes, ponds, and streams. By the Devonian, they had invaded the sea and evolved true jaws. They attacked

***Nautilus belauensis* Saunders, 1981, photographed off Palau by Lee R. Berger, courtesy of Wikipedia.**

young nautiloids and the characteristic slow nautiloid growth became a major liability. The nautiloids dwindled as fish proliferated. Closely related cephalopods, the ammonites, seemed to partially solve the predation problem by producing vast numbers of tiny eggs (nautiloids produced only few eggs at a time with slow rates of development). Thus ammonites, with numerous young floating in the plankton, could be carried by currents to widely separated parts of the globe. By the end of the Devonian they radiated explosively into many hundreds of new species. Over 80 genera existed at that time, but they were later annihilated by successive mass extinctions. They became common in the Mesozoic Era (the Age of Dinosaurs) with over 400 genera in the Triassic circ. 220 mya. Despite a mass extinction at the end of the Triassic, when only two genera survived, they radiated again in the Jurassic. By the early Cretaceous they were amongst the most common creatures of the sea. The subsequent mass extinction at the end of the Cretaceous (referred to as the KT extinction circ. 65 mya) annihilated them, after a 300 million year reign.

The cardinal question is why did the nautiloids survive the KT extinction? According to P.T. Ward (1991), one of the reasons is that *Nautilus* eggs seem to be laid and kept at great depths (100-300 meters) during the year it takes them to develop. The KT catastrophe may have killed off all juvenile and adult ammonites as well as nautiloids, but it is possible that the slow developing nautiloid eggs were preserved in the depths. In any case, only two nautiloid genera survived to the present, *Nautilus* and *Allonautilus* (though there is still some dispute about the status of this second genus). They are represented by only five species (or six, or seven, again depending upon author). Generally accepted species of Nautilidae are: *Allonautilus perforatus* (Conrad, 1849) (Indonesia); *Allonautilus scrobiculatus* (Lightfoot, 1786) (Papua new Guinea and the Solomon Islands); *Nautilus belauensis* Saunders, 1981 (Palau); *Nautilus macromphalus* Sowerby, 1848 (New Caledonia to NE Australia); *Nautilus pompilius* Linnaeus, 1758 (type) (southern Japan to Australia and Indonesia to Fiji); *Nautilus stenomphalus* Sowerby, 1848 (Queensland, Australia).

There are, of course, other cephalopods that demonstrate an ancient lineage. Perhaps of most interest here would be *Spirula spirula* (Linnaeus, 1758). This deep-sea dweller looks like a squid, but is actually the last surviving member of the fossil family Belemnoidea (belemnites), a group of squid-like creatures that are related to ammonites and may have giving rise to modern squids and cuttlefish. Today, *Spirula spirula* is mostly known from the small white spiral shell that is completely enclosed inside the animal in life, but often washes ashore on tropical and temperate beaches after the animal dies.

Are these the only living fossils of mollusks? Certainly not, but how many mollusks can be traced back in the fossil record for at least 150 mya? I have searched my available literature and would like to present a list of the extant common families whose ancestors I was able to trace back further than 150 mya. I have not added the Cretaceous Period as it borders on the Cenozoic Era, when most of the present extant species of mollusks evolved and can be traced by more recent fossils. My list is limited to families well known to most shell collectors.

Mesozoic Era:

Jurassic - Aporrhaidae, Epitoniidae, Ringiculidae, Cylichnidae, Physidae, Retusidae, Ellobiidae, Siphonariidae. Arcidae, Anomiidae, Tellinidae, Arcticidae, Thraciidae, Teuthidae, Sepiidae

Triassic - Scissurellidae, Fissurellidae, Neritidae, Strombidae, Naticidae, Architectonicidae, Mytilidae, Pteriidae, Limidae, Ostreidae, Gryphaeidae, Spondylidae

Paleozoic Era:

Carboniferous - Acteonidae, Pinnidae

Devonian - Solemyidae, Nuculanidae, Pectinidae, Cardiidae

Ordivician - Trochidae, Buccinidae, Scaphapoda

Cambrian - Pleurotomariidae**,** Chitons

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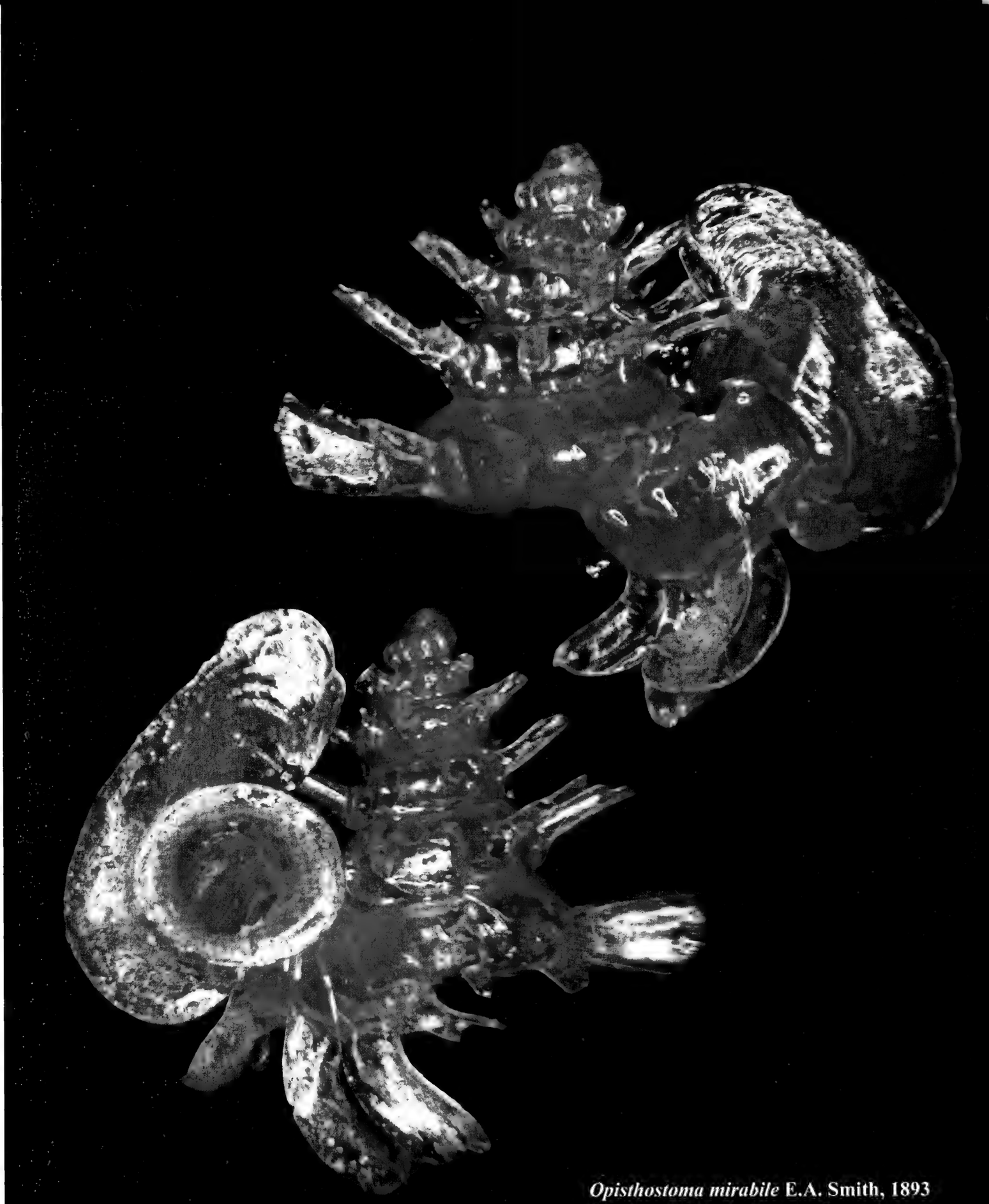
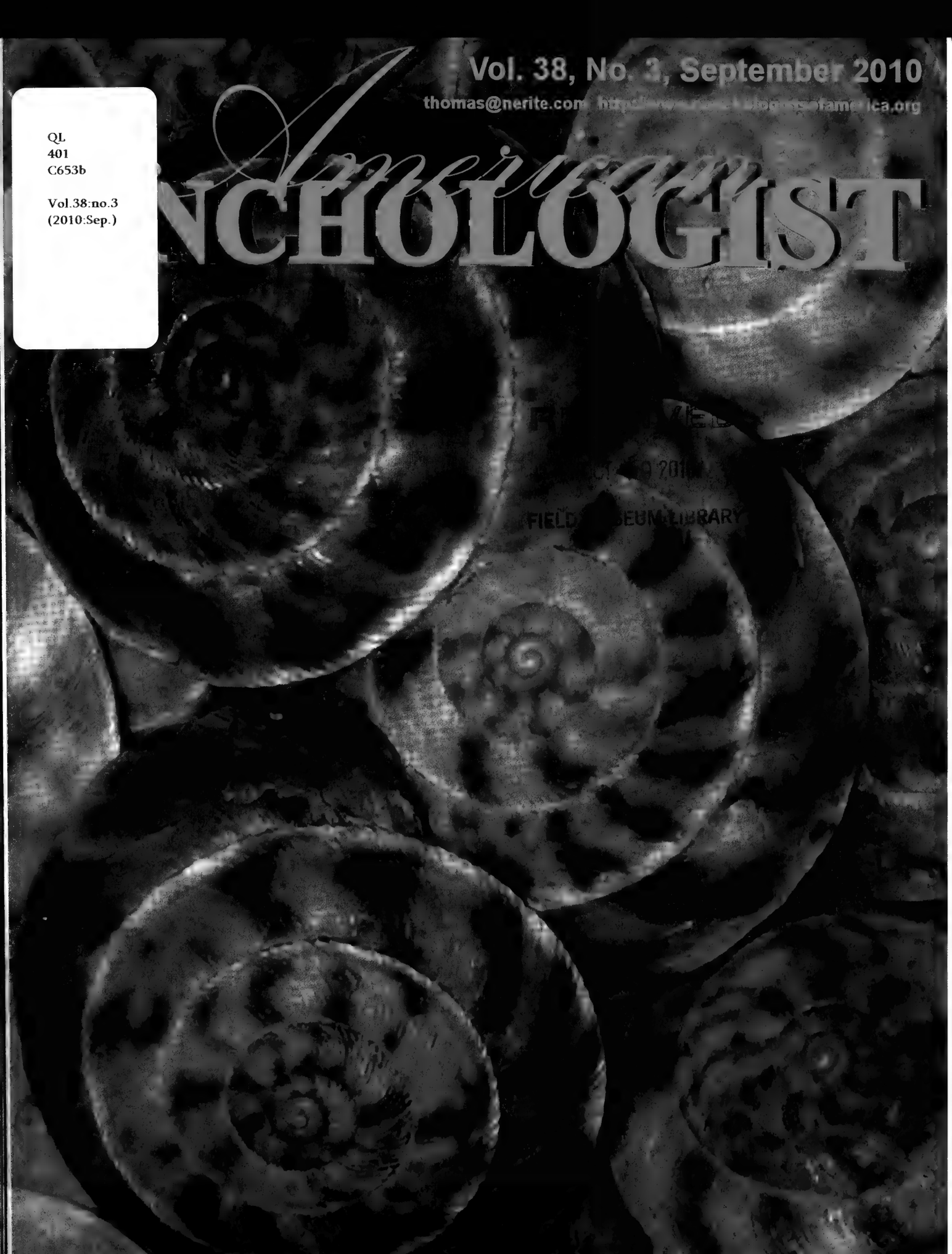


Opisthostoma mirabile **E.A. Smith, 1893**
4.5mm, on limestone rock, Borneo

Vol. 38, No. 3, September 2010

thomas@nerite.com

American Conchologist



Quarterly Journal of the Conchologists of America, Inc.

CONCHOLOGISTS OF AMERICA, INC.

In 1972, a group of shell collectors saw the need for a national organization devoted to the interests of shell collectors; to the beauty of shells, to their scientific aspects, and to the collecting and preservation of mollusks. This was the start of COA. Our membership includes novices, advanced collectors, scientists, and shell dealers from around the world. In 1995, COA adopted a conservation resolution: Whereas there are an estimated 100,000 species of living mollusks, many of great economic, ecological, and cultural importance to humans and whereas habitat destruction and commercial fisheries have had serious effects on mollusk populations worldwide, and whereas modern conchology continues the tradition of amateur naturalists exploring and documenting the natural world, be it resolved that the Conchologists of America endorses responsible scientific collecting as a means of monitoring the status of mollusk species and populations and promoting informed decision making in regulatory processes intended to safeguard mollusks and their habitats.

Visit the COA website: http://conchologistsofamerica.org. Subscribe to Conch-L, the COA listserver (owned and operated by the University of Georgia) at: listserv@listserv.uga.edu Instructions for joining Conch-L are on the COA web site.

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MEMBERSHIP is for the calendar year, January-December, late memberships are retroactive to January. 2010 DUES: $25; postal surcharge: USA none ($5 additional for USA first class), $5 for Canada and Mexico (total of $30), $15 for all other countries (total of $40). New members apply to Doris Underwood, Membership Director. Please pay in U.S. dollars ($), or with a check on a U.S. bank with Transit Enrouting and Account Numbers printed at the bottom, or with money order. Make checks payable to: CONCHOLOGISTS OF AMERICA. Notify Membership Director with change of address.

BACK ISSUES are available from Doris Underwood, Membership Director. Prices: prior to 1999, $3 each, 2000 to 2008 $4 each, 2009 to current, $5 each; postage extra.

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In This Issue

Front cover: *Anguispira picta* (Clapp, 1920), a seldom seen land snail limited to one small valley in Tennessee. One of three common names for this snail is painted snake coiled forest snail. This is a protected species and these shells were dead collected by Doug Shelton with a permit from and working for the state of Tennessee (see article on page 30). Photo by Doug Shelton.

Back cover: *Tridacna gigas* (Linnaeus, 1758), the giant clam, can grow to four feet. This specimen was photographed in the Solomon Islands, image courtesy of Simon's Specimen Shells Ltd. at: www.simons-specimen-shells.com/ Hopefully Simon Aiken will have a full report with photos for the next issue.

Editor's comments: I am just about ready to put this issue to bed and I thought I ought to thank my contributors. I cannot always use everything I get from potential contributors, but please believe me when I say I value every article. The success of *American Conchologist* is due to the many people who continue to support this magazine; authors, photographers, proof readers, and staff (the folks who print inserts and mailing labels, stuff envelopes, and haul boxes of magazines to be posted). Now, an apology for not including an article on the COA convention in Boston. It was a great convention, I repeat, a great convention. I have not heard anyone who attended say anything but nice things about the fantastic efforts by the Boston folks that ensured everything went as programmed. I forgot my camera (bit of a hassle with a changing flight schedule) and have not yet received any pictures of the event. When I do get them I will have more to say about the convention. And speaking of pictures, if you win the COA Award, please send me a picture or two along with the announcement. I need the image in order to post the winners in the magazine.

I believe this issue should have something to interest most of our readers. We have articles on Conidae, Cypraeidae (left-handed no less), Epitoniidae, land snails, Caribbean shells, Red Sea shells, Muricidae, Strombidae, and images from Mexico. I think that is a pretty fair cross section of conchological subjects. Sadly we also have two deaths to report: Andrew Grebneff and Bob Dayle. Both are individuals I knew and liked, while never having met either one in person. Yet because of the Internet I knew both as well as many friends I see in town. We often lament the "graying of our hobby," but both Andrew and Bob were quite a ways from that label. Losing young shellers is doubly painful.

Finally some business. Carlos Henkes sets up and runs our COA web site. He knows his business and can pretty much do anything asked as far as the web site goes. What we need is someone interested in providing material for Carlos to post. This person does not have to be a computer expert (although computer skills would certainly help), just have an interest in making the COA website current, up-to-date, and useful for both members and nonmembers. If you have thought, "Why doesn't the COA website have "such and such?" then maybe you are what we need. Give me a call or email me.

Tom Eichhorst

Conus archetypus Crosse, 1865, in northwestern Panama

Emilio Fabián García

During my visit to Bocas del Toro Archipelago, northwestern Panama (see *American Conchologist* vol. 38, no. 2, June 2010), I collected some puzzling "little red cones" that did not look like any of their congeners from the western Caribbean. I had consulted Olsson & McGinty (1958), who had done extensive collecting in the archipelago; among the cones listed, however, only the taxon "*Conus regius cardinalis* Hwass" seemed to be similar enough to qualify as a misidentification for this cone. I had collected only one specimen of *C. cardinalis*, but had on hand five specimens of the cone in question, so I presume that Olsson and McGinty did collect this species, as four of my specimens were collected in the drift line and exposed reef, not SCUBA diving. Moreover, they were collected at three different stations: NE Isla Colón (Figs. 1-3), Bastimento Norte (Figs. 4-5), and Zapatillas Key No. 1 (Figs. 6-8). The specimens were put away until recently, when I needed to get back to them because I was preparing a report on mollusks from the archipelago (García, 2010).

As luck would have it I was also working on a paper on turrids and I asked Mr. John Tucker for help in obtaining a copy of an old turrid description. He complied and then we started "talking cones," so I took the opportunity to send him images of the Bocas specimens. John suggested some possibilities and sent some images, and we finally narrowed it down to a cone complex that comprises *Conus ziczac* Mühlfeld, 1816 (Fig. 14), *C. archetypus* Crosse, 1865, *C. beddomei* Sowerby, 1901, and *C. brasiliensis* Clench, 1942.

The taxonomy of this group is somewhat nebulous and cone specialists differ in their opinions, considering some of these taxa as either synonyms, subspecies, or perhaps a single, very variable species, as John does. This would be *Conus ziczac.*

The Bocas cones match very well the holotype of *Conus brasiliensis* (Figs. 10-11), but since this taxon is considered to be a junior synonym of *C. archetypus* (Figs. 12-13) by cone specialists, I am calling it by the latter name. I have in my collection, however, a specimen of *Conus "beddomei"* from Brazil that is also very similar to the Bocas cones (Fig. 9), one from the Granadines that seems to be an intermediate form (Fig.16), and still another from the same island group (Fig. 17) that resembles the holotype of *C. ziczac*. Moreover, the holotypes of *Conus ziczac* (Fig. 14) and *C. beddomei* (Fig. 15) are rather similar, considering that the holotype of *C. ziczac* is probably a juvenile, measuring only 8.2 mm and probably has a proportionately higher spire than it would as an adult (compare Figs. 14 and 15, as well as Fig. 17). So, perhaps after the dust is settled, John's suggestion may be the answer and the name of the Bocas cone may turn out to be *Conus ziczac.* That is for the specialists to decide.

Although typical *Conus archetypus* has until recently been restricted to Brazil, Macsotay & Campos (2001: 109) reported collecting 16 specimens of *Conus brasiliensis* in Venezuela by SCUBA diving. On the other hand, Díaz & Puyana (1994) do not report it from Colombia. When Clench described *Conus brasiliensis*, his remarks concerning the Brazilian molluscan fauna were that "though mainly West Indian in the character of its fauna, there are many species known from this region that appear only in the northern Caribbean or to the south of it." (Clench, 1942: 25) The new record places *Conus archetypus* in Central America, that is, "to the west of it."

My special thanks go to Mr. John Tucker, Illinois Natural History Survey, for sending images and literature concerning this project that allowed me to gain a clearer picture of this cone complex, and to Dr. Alan Kohn, Professor Emeritus, University of Washington, who graciously gave his permission to use his images of the holotypes of *Conus ziczac, C. archetypus, C. beddomei,* and *C. brasiliensis*.

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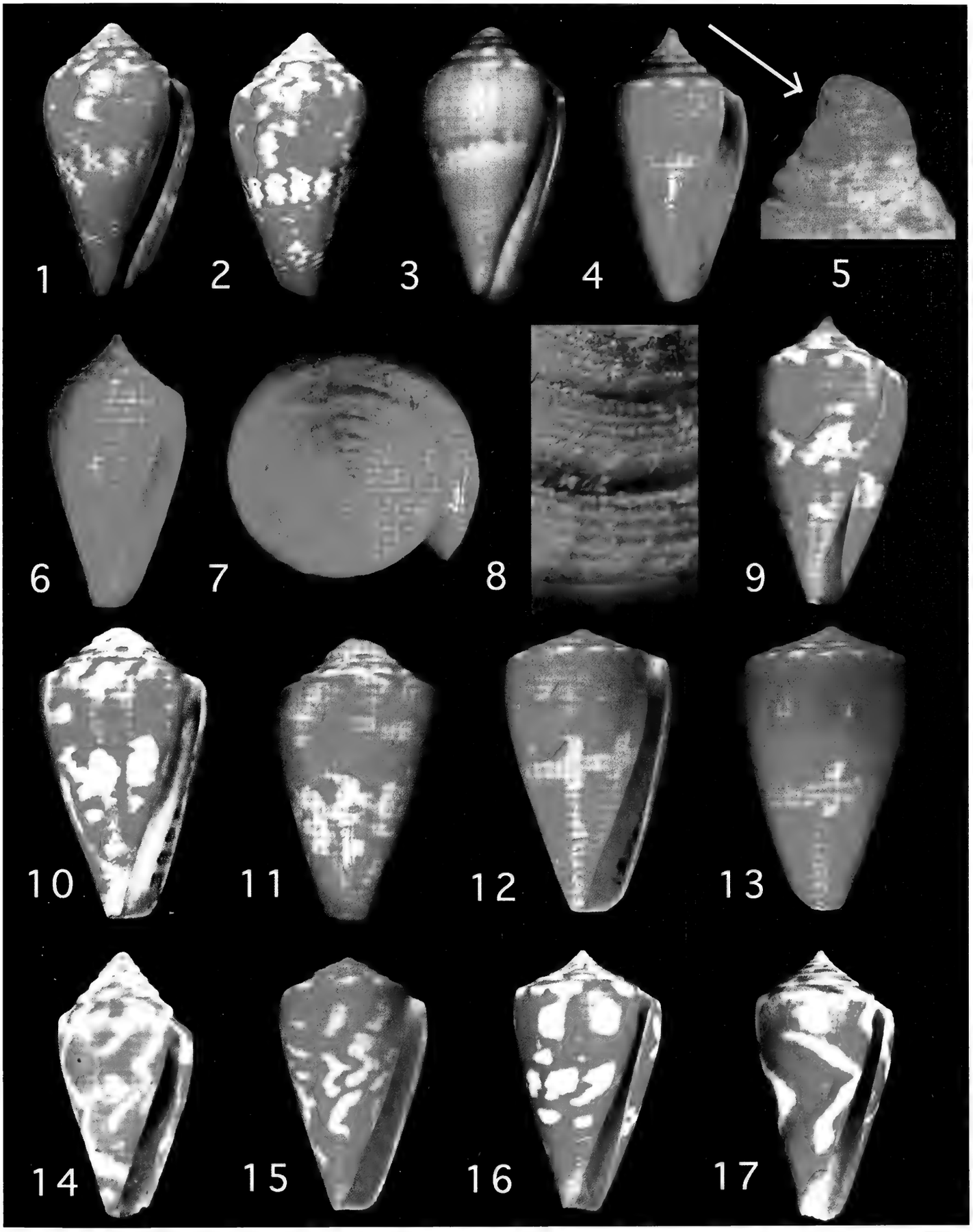
1-8. *Conus archetypus* Crosse, 1865, Bocas del Toro Archipelago, Panama. **1-3**. 9°22.027'N, 82°14.336'W, Isla Colón, 24.9mm (EFG 25559). **4-5.** 9°21.052'N, 82°15.34'W, Bastimento Norte, 16.9mm (EFG 25656). **6-8.** 9°15.564'N, 82°02.750'W, Zapatilla Key No. 1, 4-12 m, 21.9mm (EFG 25670). **9. *Conus beddomei* Sowerby III, 1901**, Natal, Brazil, in 20 m, 18.7mm (EFG 27024). **10-11. *Conus brasiliensis* Clench, 1942**, holotype, Museum of Comparative Zoology, Harvard; Brazil, Victória, Espirito Santo state, 22mm (image courtesy Dr. Alan Kohn). **12-13. *Conus archetypus* Crosse, 1865,** holotype, (The Natural History Museum, London), Brazil, Baia de Todos os Santos, Salvador, State of Bahia, 24.9mm (image courtesy Dr. Alan Kohn). **14. *Conus ziczac* Mühlfeld, 1816**, holotype, (Naturhistorisches Museum, Wien, Vienna) Mediterranean Sea (erroneous), 8.2mm (image courtesy Dr. Alan Kohn). **15. *Conus beddomei* Sowerby III, 1901**, holotype, (The Natural History Museum, London), West Indies, restricted to Grenadines, Lesser Antilles by Coomans, Moolenbeek & Wils (1982), 27mm (image courtesy Dr. Alan Kohn). **16. *Conus beddomei* Sowerby III**, Carriacou, Grenadines, 15 ft., in rubble, 25.8mm (EFG 24282). **17. *Conus beddomei* Sowerby III, 1901**. Mustique I., Grenadines, SCUBA in l0-l5', 21.1mm (EFG 6544).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Absence of evidence is not evidence of absence, or never say "never"

by Harry G. Lee

Recently, a note from Dr. Pete Simpson of Loudon, Tennessee, called to mind one of the odder auguries in the culture of conchology.

Late in his distinguished career, Franz Alfred Schilder, the most prolific Twentieth Century authority on the Cypraeidae, made the pronouncement that "nobody will find a sinistral cowry" (Schilder, 1964). Prof. Schilder's confidence was born of his examination of "more than 150,000 cowries" and a probable familiarity with the several inclusive surveys of mutant gastropod sinistrality (Fischer and Bouvier, 1892; Sykes, 1905; Ancey, 1906; Dautzenberg, 1914; and Pelseneer, 1920) by fellow Europeans, none of which provided any indication of such an anomaly. Dr. Schilder went on to impugn the veracity a report of a sinistral *Notocypraea declivis* (G.B. Sowerby II, 1870) in the South Australian [SA] Museum (Griffiths, 1962) with faintly-veiled skepticism.

Apparently, the gauntlet was never retrieved by Griffiths, but it didn't take long for Schilder's pervasive prediction to be repudiated by a fellow Aussie. Early in 1967, Jack Aitken took a sinistral *Bistolida brevidentata brevidentata* (G.B. Sowerby II, 1870) off Tryon Island, Capricorn Group, Queensland, Australia. It was reported in the 9/67 *Keppel Bay Tidings* and illustrated in the 12/67 number of that periodical accompanied by a Don Byrne photo. Mrs. Val Harris of Caloundra, Qld., the second owner, sold it to Luigi Raybaudi Massilia of Rome, Italy, in 1976 (Harris, personal communication, 23 May, 1980; Raybaudi, 1987: 2 color figs.), and it has changed hands at least twice since then. Despite its present obscurity, the shell, or at least the two sets of its photographic images, has left its imprint in the annals of conchology.

Not long afterward, Peter Dance published a set of photographs depicting a sinistral 30mm *Cypraeovula capensis capensis* (Gray, 1828) found by Mrs. Viva Armstrong of East London, South Africa, at nearby Sunrise on Sea in November, 1970. Although the Aitken shell escaped Peter's notice, the Griffiths (1962) record was apparently taken on faith and incorporated in his report (Dance, 1972). Things were already beginning to warm up.

As the situation continued to evolve, "snowballing" turned out to be a more apt metaphor. Over the final quarter of the Twentieth Century and into the present one, the Republic of South Africa (RSA), especially the beaches of Jeffreys and Algoa Bays, continued to produce sinistral cypraeids at an unprecedented rate (as in two dozen; count them below) and unparalleled diversity (six species):

Cypraeovula c. capensis:
To the Dance record, which shell later reached the collection of Enrico Caponetto of Naples, Italy (Dance, 1972, Burgess, 1985), we can add:
[2] Gwen Pini's (Innisfail, Australia) shell, apparently collected not long afterwards at Jeffreys Bay, RSA. A notice with photo appeared in *Keppel Bay Tidings* sometime around 1973 (my cropped photocopy lacks any evidence for a more precise citation) and a little over a year later in Tom Rice's journal (Anon., 1975).
[3] A specimen illustrated by Burgess (1985: 269). It is distinct from the Armstrong and Pini specimens.
[3] An unattributed ("private treaty") 29mm shell collected on the beach at East London and figured by Raybaudi (1986: 33; fig. 43 [35]) appears to be the Armstrong-Caponetto specimen.
[4, 5] Subsequently, two shells were collected (1986, 1991), at least the first one on the shore of Algoa Bay, by Mariette Jearey (Jearey, 2000).
[6] A shell found on the beach at Algoa Bay in 2008, Lee Collection, 31.1mm, **Fig. 1.**

Cypraeovula alfredensis alfredensis (M. Schilder and F.A. Schilder, 1929):
[7] A shell found on the beach at Jeffreys Bay in 2005, Lee Collection, 26.0mm, **Fig. 2.**

Cypraeovula mikeharti Lorenz, 1985:
[8] A shell collected alive in False Bay, RSA, and declared to be, along with the Aitken shell discussed above, "by far the rarest cowrie in the world" (Raybaudi, 1992). The locality of the discovery was refined to "off Cape Agulhas" (de Bruin, 1994: 39).

Cypraeovula edentula edentula (Gray, 1825):
[9] Pat Burgess (1985: 269) reported a specimen.
[10] Raybaudi (1987] reported a second specimen, also beach-collected.
[10 or 11] Bruno de Bruin (1994) reported a specimen, possibly one of the above two, not unlikely the next on the list, but possibly neither.
[11 or 12] A shell collected on the beach at Jeffreys Bay and received from Bruno (Don Pisor, personal communication, 30 June, 2010; (collected in 1990, 25.5mm).
[12 or 13] A shell collected at Jeffreys Bay in 1996, Lee Collection, 23.7mm, **Fig. 3 left.** That makes at least three … hold the presses:
[16 to 20] Guido Poppe (pers. comm., 29 June, 2000) reported seven specimens in private European collections - five of which belong to a single individual. Of the specimens listed above, anywhere from none to three could be among these seven. Then there's the Internet account at <http://cowryforum.bboard.de/board/ftopic-41123903nx25725-170.html> of a Belgian collector who picked a "2/3 piece" of a sinistral *C. e. edentula* from a shell bin in an Oostende shell shop and later "simply threw it away." Given revelations like Guido's and the shell-chucker's, one quickly realizes that achieving a complete inventory is a more elusive goal than the "mere" discovery of a leftie cowrie.

Cypraeovula fuscodentata fuscodentata (Gray, 1825):
[17 to 21] From a beach in the RSA (Burgess, 1985: 269).
[20 to 24] Litved (1989: 96) listed three specimens.
[21 to 25] A shell found on the beach at Jeffreys Bay in 1995, Lee Collection, 29.3mm, **Fig. 3 middle.**

Cypraeovula fuscorubra fuscorubra (Shaw, 1909):
[22 to 26] De Bruin (1994) reported collecting a living specimen in 46 meters off Cape Pt., RSA and produced fine photographs of

Fig. 1 Sinistral (L) and dextral (R) *Cypraeovula capensis capensis*, 31.1mm (sinistral specimen), Algoa Bay, Republic of South Africa.

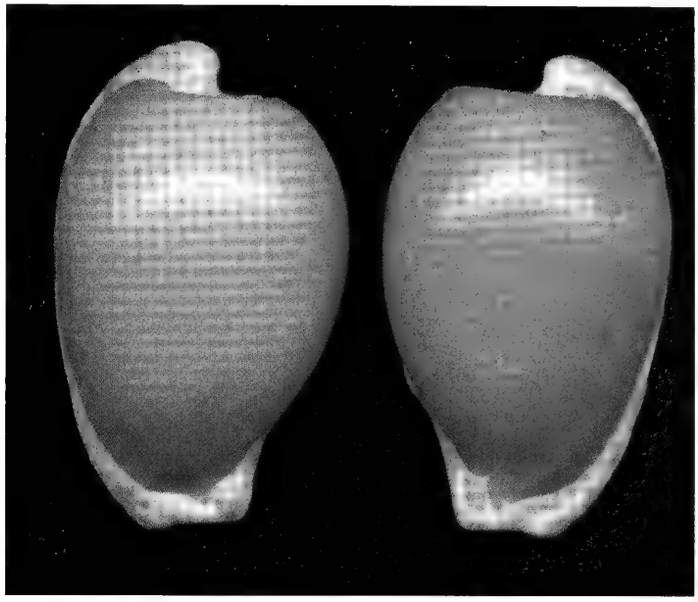

Fig. 2 Dextral (L) and sinistral (R) *Cypraeovula alfredensis*, 26mm (sinistral specimen), beach at Jeffreys Bay, Republic of South Africa.

it in juxtaposition with a living dextral critter. This report is the most fully-documented account of a live-taken sinistral cowrie. A fine image of this shell is posted at <http://cowryforum.bboard.de/board/ftopic-41123903nx25725-170.html>.

Although no match for the RSA, Australia did manage to re-emerge on the scene with an interesting record, *Notocypraea angustata* (Gmelin, 1791). Mrs. Peg Altorfer of Port Mac Donnell, SA, found a living example "in daylight, under rocks during an average low tide" at Racecourse Bay (in her home town) during the second week of February, 1977. She reported it to be "only the second sinistral form of *Cypraea angustata* found in the area over the last twenty five years" (Keppel Bay Tidings ca. 1978: my cropped photocopy lacks remainder of citation). The whereabouts of the earlier find were not provided, but there's a reasonable chance it is the *Notocypraea* "*declivis*" cited by Griffiths (1962) in the SA Museum, of which Raybaudi (1987) wrote "according to my informers ... the sinistral declivis ... does not exist," supporting earlier skepticism (Schilder, 1964). It is a near certainty that this Altorfer specimen is the one identified (later in the same disjointed polemic) as *N. comptonii mayi* (Beddome, 1898) from Port Mac Donnel [sic], SA (Raybaudi, 1987). This shell, which to this day still bears the binomen applied by Mrs. Altorfer, came to the Lee Collection in May, 1980; it measures 26.6mm, **Fig. 3 right.** Dr. Felix Lorenz (personal communication, 11 July, 2010) confirmed the identification. In that same correspondence he re-

Fig. 3 Sinistral (L) and dextral (R) *Cypraeovula edentula edentula* (L), 23.7 (sinistral specimen), collected in Jeffreys Bay, RSA, in 1996; *Cypraeovula fuscodentata fuscodentata* (Middle), 29.3mm (sinistral specimen), collected on the beach at Jeffreys Bay, RSA, 1995; and *Notocypraea angustata* (R), 26.6mm, (sinistral specimen), collected by Peg Altorfer under rocks at low tide at night in Port Mac Donnell, South Australia, 1977.

ported having recently examined another sinistral *Notocypraea*, *N. comptonii comptonii* (Gray, 1840) [form *trenberthae* Trenberth, 1961].

The exclusivity of the Southern Hemisphere as the breeding grounds of sinistral cypraeids was finally terminated with the report of a sinistral *Muracypraea mus mus* (Linnaeus, 1758) apparently collected alive by Royce Hubert in Venezuela (Anon., 1985). At that time the shell, measuring "approximately 50mm," was in the possession of Alex Kerstitch of Tucson, AZ. Shortly, two 34mm juveniles were reported from the vicinity (Hoeblich, 1986), and Raybaudi (1987) recorded these three specimens while illustrating the Hubert specimen (without attribution) in color. Very recently, Felix Lorenz (personal communication, 22 March, 2009; see Internet link below) posted an image of a fourth specimen, a beautiful live-taken adult shell.

For an inventory of this sort, the necessary reliance on the "gray" literature invites a certain exposure to apochrypha. One striking instance is the report by Raybaudi (1987) of a sinistral Brazilian *Macrocypraea zebra* (Linnaeus, 1758) [as *M. z. dissimilis* (F. Schilder, 1924), now considered a synonym]. This spectacular "find" was repeated in Litved (1989: 96), but, after a few more years, Raybaudi (1994) issued a retraction, stating simply: "*zebra* a mistake." More than one forensic scenario comes to mind to explain this prodigious gaffe.

Getting back to the subject of Dr. Simpson's tidings... Pete told me that a contact of his was sending him an unusual *Mauritia mauritiana* (Linnaeus, 1758) which, like the specimens discussed above and judging from a photograph sent in advance (**Figure 4**; topical shell on R), appeared to be of reversed coil. It measured 70mm and was collected at 5-10 meters on an open reef just off Laminusa Island, a satellite of Siasi Island, near Jolo in the Sulu Archipelago, southernmost Philippines.

As we awaited the shell's arrival, clouds of skepticism began to mass. First Emilio Power (personal communication 9 July, 2010) opined: "The *mauritiana* looks odd, the posterior is sinistral, however, the aperture and dentition ARE NOT reversed. Needs an x-ray for determination, no???" and Felix Lorenz (personal communication 10 July, 2010): "If you look sharp you will see that Pete's shell (assuming it is the one on the right of the photo) is not sinistral. The columella is on the left side where it belongs. The labrum is exceptionally wide and the aperture peculiarly curved as a result of malformation, giving the impression that 'something is wrong.'"

The shell arrived a few days later, and, since Pete is a practicing physician, it was not a great inconvenience to obtain Xrays of the two shells in Figure 4. They confirm the Power-Lorenz hypothesis: the odd *M. mauritiana* [**Figure 5: middle image**] grew like the normal specimen [**Figure 5: L**] for most of its existence; the significant morphologic anomaly was limited to the final stages of growth, involving the callus formation of the posterior half of the aperture. **Figure 5: R** is a hypothetical sinistral shell created by mirroring the normal image. Regrettably, the sinistral *M. mauritiana* must remain imaginary; although of great interest, Pete's Siasi shell is dextral.

During the suspenseful week or so that this specimen was in transit, I realized that it had the potential to be (1) the first known sinistral of its species, (2) only the second left-handed cowrie species collected N of the equator, (3) the largest sinistral

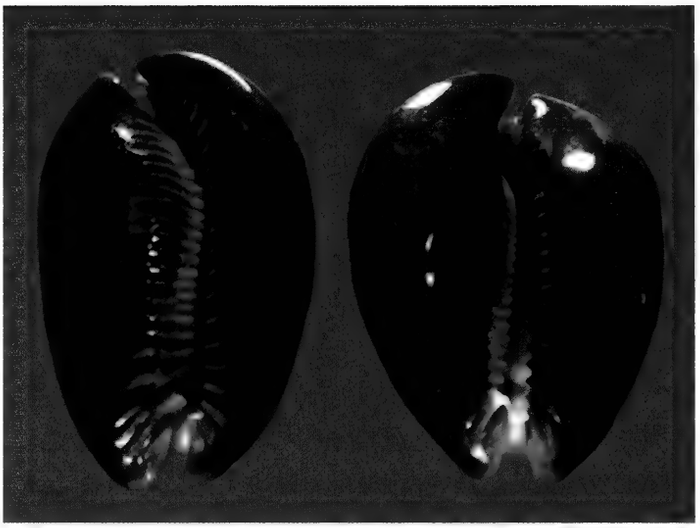

Fig. 4 The oddly-shaped specimen of *Mauritia mauritiana* (R), 70mm, collected on an open reef off Laminusa Island, Sulu Archipelago, Philippines. When compared to a normal specimn (L), it is understandable why it was initially thought to be sinistral.

cypraeid on record, and (4) only the second instance of cypraeid coiling reversal in a species with a free-swimming larva – a trait shared only by the iconic *Bistolida brevidentata brevidentata*, and a fact confirmed by Dr, Lorenz in the communication cited above. Although none of these marks was realized, the last consideration led to a potentially valuable insight on cowrie sinistrality and chiral reversal in general.

Litved (1989: 96) remarked that in all but one of the known instances, the mutant sinistral cypraeid species known to him shared a trait: lecithotrophy. Instead of swimming to join the ranks of the plankton, their young simply crawl away from their egg capsules. For cowrie species, this life-style is the exception rather than the rule, and it is characteristic of the temperate waters of the Southern Hemisphere, where it has evolved independently in genera like *Austrocypraea*, *Umbilia*, *Zoila*, as well as the now familiar *Cypraeovula* and *Notocypraea* (Wilson, 1985, 1998). The lecithotropic *Muracypraea* is a rare exception as nearly all the other myriad tropical species produce free-swimming (planktotrophic) larvae. The most familiar, widely-distributed, and abundant cowries, e.g., *Cypraea tigris* (Linnaeus, 1758), *Mauritia arabica* (Linnaeus, 1758), *Monetaria annulus* (Linnaeus, 1758), *M. caputserpentis* (Linnaeus, 1758), *M. moneta* (Linnaeus, 1758), are but a few of this legion. It has been remarked many times that the complete lack of a sinistral example of any of these five ubiquitous planktotrophic species alone, many millions of specimens of which have come into human hands, is an amazement. Compound this with the 200-odd other species-level members of the legion, and the crawl-away/swim-away disparity is even more stark with respect to mutant sinsitrality.

Hendricks (2009) found a similar bias in mutant sinistral conesnails and he remarked that it may be more than mere coincidence that *Contraconus* Olsson and Harbison, 1953, the only normally sinistral lineage in the family, was lecithotrophic. The vast majority of the over 100 marine gastropod species reported at <http://www.jaxshells.org/reverse.htm> as reverse-coiled mu-

tants likewise have crawl-away, not swim-away, larvae (Lee, unpublished). Finally, with the exception of the Triphoridae, all of the **normally** sinistral Tertiary and Quarternary marine gastropods for which larval history is known or can be inferred, e.g., Laeocochlidinae Golikov and Starobogatov, 1987; the buccinids *Antistreptus* Dall, 1902, *Neptunea contraria* (Linnaeus, 1771), *Neptunea laeva* Golikov, Goryachev, and Kantor, 1987, *Prosipho contrarius* Thiele, 1912, *Prosipho perversus* Powell, 1951, *Prosipho reversus* Powell, 1958, and *Pyrolofusus* Morch, 1869; the busyconines *Busycon perversum* (Linnaeus, 1758) and *Tropochasca* Olsson, 1967, *Sinistralia* H. and A. Adams, 1853, *Contraconus*, *Terebra inversa* Nyst, 1835; and six lineages of "classic" turrids are lecithotrophic (Lee, unpublished).

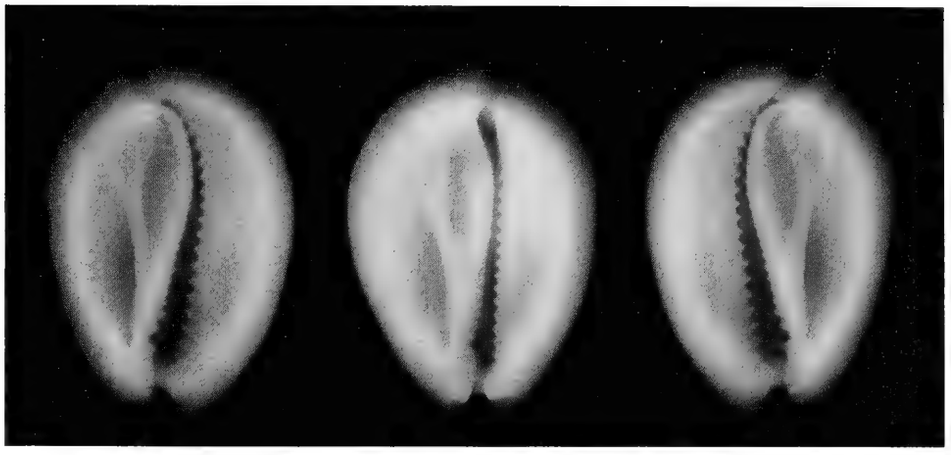

Fig. 5 Xray images of a normally coiled *Mauritia mauritiana* (L), the specimen originally thought to be sinistral (M), and "mirror image" of a normal dextral specimen (R) showing what a sinistral specimen would look like.

What is the basis for the link between sinistrality and lecithotrophy in marine snails? One reasonable hypothesis is that the planktonic milieu may exert stronger selective pressure against randomly-mutated reverse-coiled larvae relative to their normal counterparts than that imposed on hatchlings directly adopting the benthic lifestyle. Perhaps a parallel may be drawn with the terrestrial pulmonates, which group comfortably passes all its larval stages in ovo, and proceeds to have a much higher frequency of normal and mutant reversal of coil than their marine cousins (Pelseneer, 1920; Lee, unpublished), but I digress....

Even without the *Mauritia mauritiana* coup-de-grace I anticipated when I began this essay, we can still be secure that well over two dozen sinistral Recent cypraeid specimens [22 to 26 known from the RSA + 7 from other localities] of no less than ten species repose in collections somewhere today - a rather stirring statistic, a testimony to lecithotrophy, and a poignant riposte to Herr Dr. Schilder's pessimistic prophecy of just two generations ago.

Acknowledgements: I thank Emilio Power for help locating some of the references in the popular literature, Dr. Pete Stimpson for information on, and images of, his specimen, Felix Lorenz and Emilio Power for sharing helpful insights, and Bill Frank for image-editing.

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A geographic extension for two species of *Favartia* (Muricidae: Muricopsinae) from the western Atlantic

Emilio Fabián García

While reviewing western Atlantic species of the genus *Favartia* in my collection, I realized I had failed to report two records of *Favartia nucea* (Mørch, 1850) from the Gulf of Mexico in earlier publications (García, 2007; García & Lee, 2002, 2003, 2004; Rosenberg et al., 2009). In the Gulf of Mexico, *F. nucea* has only been reported from west Florida; however, I have a specimen that we dredged off Louisiana at 28° 06.975'N, 90° 58.150'W, in 92-89 meters (Figure 1) (EFG 23206). A second specimen was dredged in Campeche Bay, southern Gulf of Mexico, at 21°51.32'N, 92°03.68'W, in 66-68 meters (Figure 2) (EFG 26149). These specimens differ from the typical *F. nucea* of the Caribbean in having more angular, less rounded shoulders and more elevated varices. I have not seen examples of *F. nucea* from west Florida. Ironically, although *F. nucea* has now been reported from three quadrants in the Gulf of Mexico, it has not yet been reported from the southeastern quadrant, the most obvious because of its geographic location and habitats typical of those in which the species is normally found. Mr. Frank Frumar, of Kirkwood, Missouri, who has done extensive dredging around the Florida Keys, has not collected the species there (pers. com.).

Also, while researching two unidentified *Favartia* specimens I have had in my collection for a couple of decades, another discovery occured. One of the specimens had been collected off Pidgeon Point, Falmouth Harbour, Antigua, Lesser Antilles, in 30 feet of water (Figure 3) (EFG11683). I collected the second specimen while snorkeling in 4 feet of water SW of Baní, southern Dominican Republic (Figure 4) (EFG 7853). This second specimen was collected alive on top of a living *Lucina pensylvanica* (Linnaeus, 1758) (EFG 7854), presumably getting ready to feed on it. I catalogued the two lots back then as *Favartia* sp. for the former and *F.* sp. *aff. nucea* for the latter.

Trying to figure out what they were, I first went to Malacolog, that indispensable research website created by Dr. Gary Rosenberg (2009) at the Academy of Natural Sciences of Philadelphia. I was looking for publications describing new *Favartia* spp. from the western Atlantic. There I found a paper by Roland Houart published in *Novapex*, another important publication at the cutting edge of malacological taxonomy, describing a new species of *Favartia* from Brazil. Since I do subscribe to the magazine and have a database for everything in my library (I use FileMaker Pro), it was easy for me to retrieve the paper in question. The new Brazilian species described in *Novapex* had been named *Favartia coltrorum*, for José and Marcus Coltro, the well-known and respected owners of the shell dealership *Femorale*. Its description and photos matched my specimens from Antigua and the Dominican Republic. The species is similar to *Favartia nucea*, *F. cellulosa* (Conrad, 1846), *F. lindae* Petuch, 1987, and *F. pacei* Petuch, 1988; however, it differs from them, among other characters, by having broader, higher, smoother, and fewer varices in the last teleoconch whorl (four, instead of five or six, as in the case of the other species) (Houart, 2005:44).

Although all of the type material comes from Brazil, the author has in his collection two specimens from Guadeloupe. They were the only reported records outside of Brazil. The new findings extend the geographic distribution for the species from roughly 16°21'N to 18°16'N, and from 61°37'W to 71°19'W. Since this taxon is not widely known, one can speculate that, with a second report of the species from the Lesser Antilles and its appearance in the Greater Antilles, there should be other specimens of *F. coltrorum* Houart, 2005, from those areas in collectors' cabinets, perhaps half-forgotten like mine were, hidden behind spurious names.

Before starting this article I sent images of all four specimens to Mr. Roland Houart, the well-known muricid researcher. Mr. Houart , whom I thank herewith, confirmed my findings, with the *caveat* (that I share) of the differences between the Louisiana and Campeche *F. nucea* and those found elsewhere.

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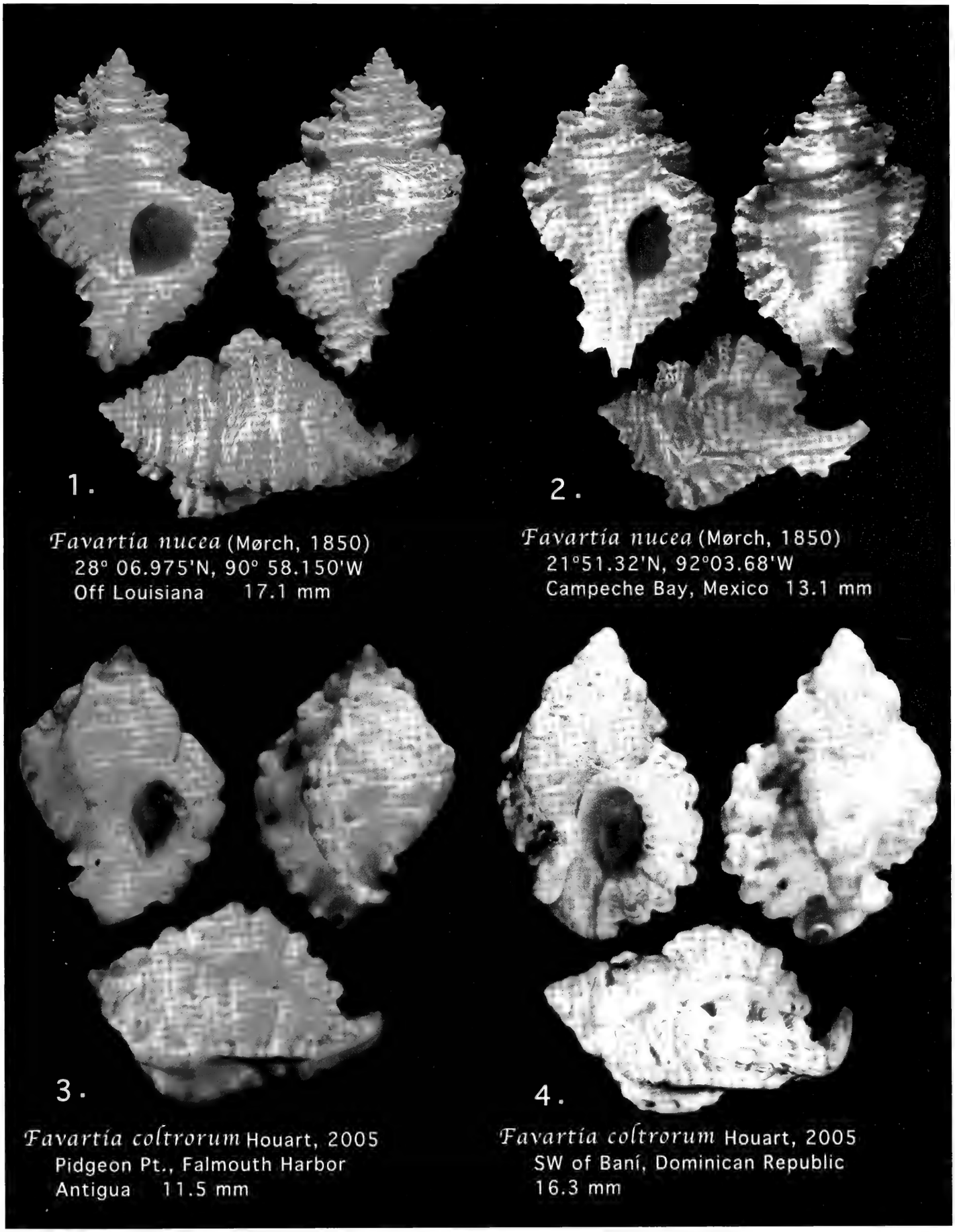


Favartia nucea (Mørch, 1850)
28° 06.975'N, 90° 58.150'W
Off Louisiana 17.1 mm

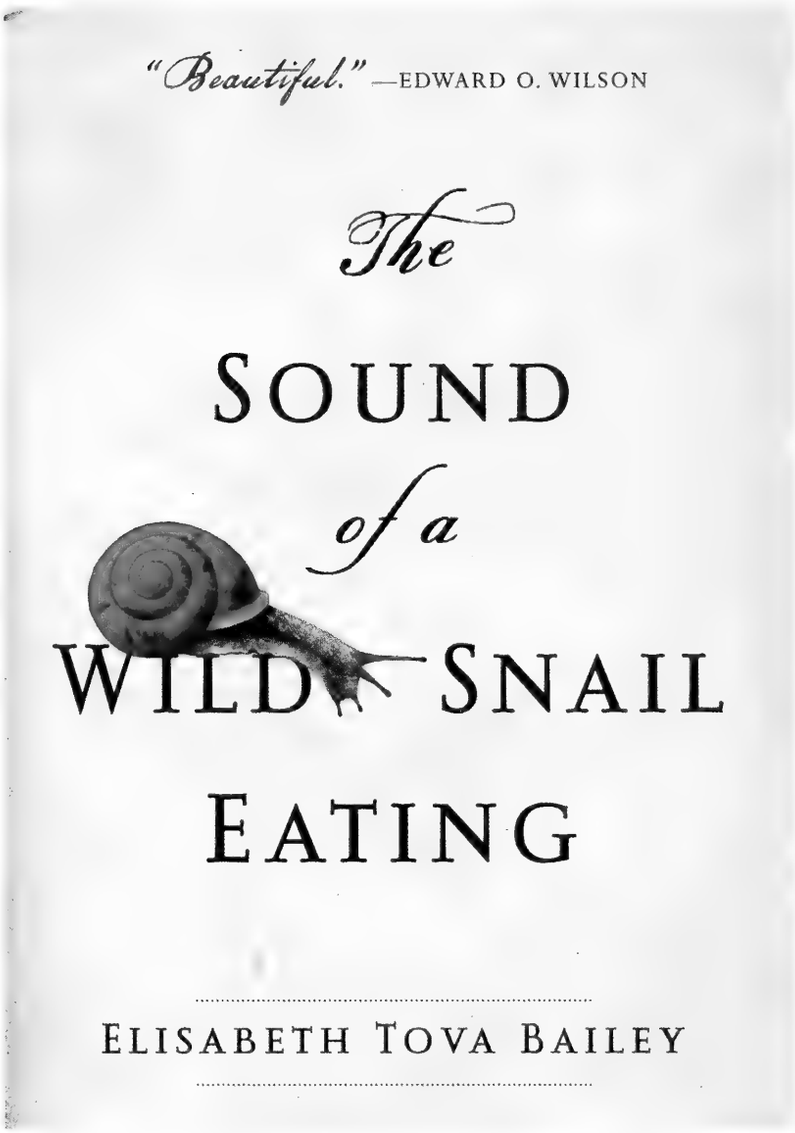
Favartia nucea (Mørch, 1850)
21°51.32'N, 92°03.68'W
Campeche Bay, Mexico 13.1 mm

Favartia coltrorum Houart, 2005
Pidgeon Pt., Falmouth Harbor
Antigua 11.5 mm

Favartia coltrorum Houart, 2005
SW of Baní, Dominican Republic
16.3 mm

The Sound of a Wild Snail Eating

by Elizabeth Tova Bailey, illustrations by Kathy Bray, 2010, Algonquin Books of Chapel Hill, NC, 191 pages, price approx. $18.95, ISBN: 978-156512-606-0



This small book (less than 200 pages double-spaced and only 5.5 x 7.5 inches) is truly a gem. It has an inner sparkle and brilliance that make it worthy of giving to a close friend, even if that friend is not interested in sea shells, land snails, or conchology. I would have thought that most readers of this magazine would not find themselves learning new secrets about land snails by reading this book, but a collector friend to whom I lent the book remarked that she had not realized land snails could have such complex living habits. There is some interesting natural history of land snails presented here, but this is not why you should read this book. The reason to read this book is stated in a quote on the front cover of the book from a review by the renowned Edward O. Wilson, who states, "Beautiful!" When a renowned biologist, researcher, lecturer, theorist, and author (two Pulitzer Prizes), like E.O. Wilson makes such a statement, anything I add would seem to be rather superfluous, but for those who might want a bit more detail, please read on.

"The Sound of a Wild Snail Eating" is a true story about the author's experiences dealing with a debilitating chronic illness that struck rapidly and unexpectedly and in a short period of time confined her to bed, hardly able to move. A friend brought her a small potted plant with a brown land snail (you don't learn the species until the end of the book) that had taken up residence in the pot. Instead of detailing her battle with, what was for the most part an unknown and undoubtedly terrifying disease, Elizabeth Bailey provides the reader with in-depth observations of the life of this snail over the course of a year. A professional malacologist friend noted that her science is "spot on." We are allowed to follow the author on a journey of discovery, made intimate because of her condition. A condition that is only a blurred background in the book, gradually brought into focus by the narrative about the snail's life and activities, and the author's rather detailed study into the biology and natural history of land snails.

Elizabeth Bailey fought her illness for two decades before finally beating it. The exact cause of the illness was never established, though various pathogens were suggested by various medical authorities. Her snail observations occupied one year of this time period, but her continued research involved several years. Because of this, she is able to provide quotes and paraphrasing from authors as varied as Edgar Allen Poe and T. H. Huxley, or Charles Darwin and Emily Dickenson, or Robert Cowie and Richard Dawkins. These authors (with the exception of Robert Cowie, a malacologist at the University of Hawaii) are certainly not where most of us would turn for information on land snails, but you may be surprised. Understandably, the selected bibliography included is eclectic. Perhaps my favorite quote is, "Every single species of the animal kingdom challenges us with all…the mysteries of life." (Karl Von Frisch, 1962, "A Biologist Remembers," translated from the original German by L. Gombrich, Oxford, 1967) This certainly fits this book where the reader is gracefully brought to an intimate examination of the mystery of life as evidenced by a small land snail as well as the larger personage of the author.

This book is a warm and rich celebration of life - all available in an afternoon's reading. Of the many ways to spend a couple of hours in the afternoon or evening, I cannot think of many more pleasant and rewarding than Elizabeth Bailey's book. You will find yourself smiling often and finish with a feeling of satisfaction. Oh, and as for the identity of the snail, I am afraid you will have to read the book.

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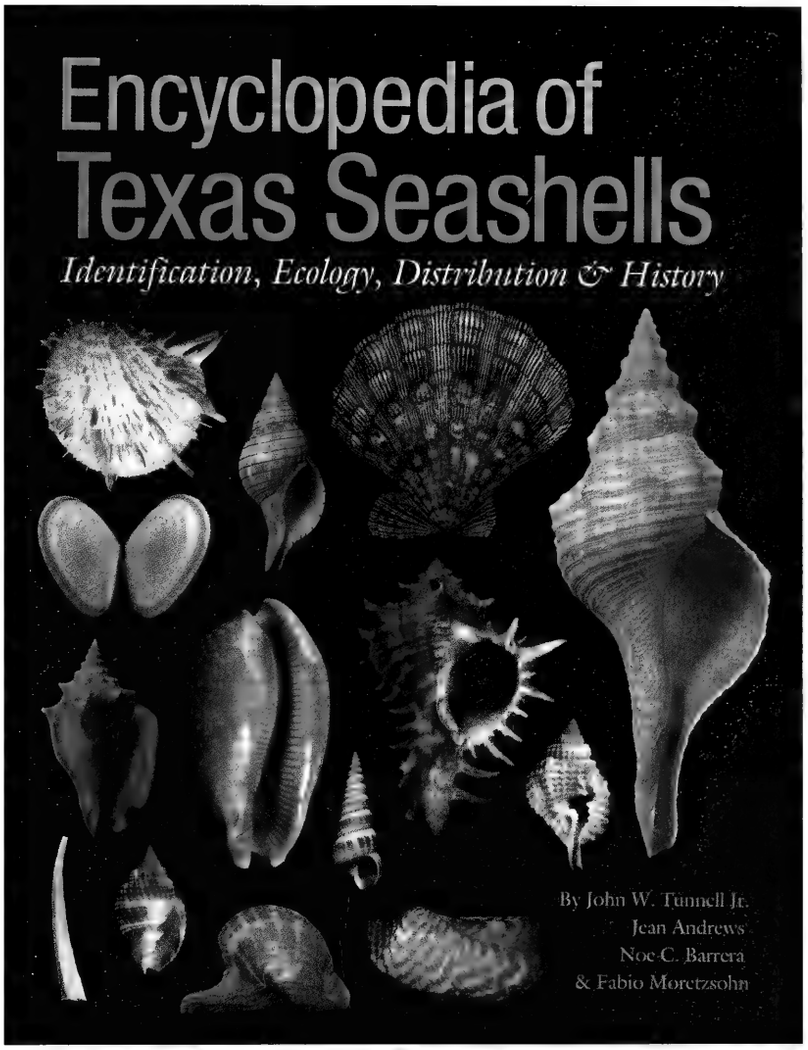
Encyclopedia of Texas Seashells

by John W. Tunnell, Jr., Jean Andrews, Noe C. Barrera, & Fabio Moretzsohn, 2010, Texas A&M University Press, College Station, Texas, 512 pages, price approx. $50.00, ISBN-13: 978-1-60344-141-4, ISBN-10: 1-60344-141-7



At a reception in Texas in 1971 to honor the publication of "Sea Shells of the Texas Coast" by the late Jean Andrews (see p. 29 of *American Conchologist* vol. 38, no. 1, March 2010), she commented on a statement about a probable "Son of Sea Shells of the Texas Coast" (later written by Jean in 1977 as an update of her original book, titled *Shells and Shores of Texas*) that there would someday be need for a "Grandson of Sea Shells of the Texas Coast." The "Encyclopedia of Texas Seashells" is that book. It is, in fact, quite a bit more than "grandson" of those volumes from decades ago. It is larger in content (512 pages), number of species (900 with micro and deep water now covered), biotypes covered (various coastal habitats to deep ocean depths), and it combines the coverage of these areas in some particularly useful ways. There are two additional authors not listed on the title page that were brought in for their expertise. Kim Withers penned chapter one, titled "Shells in Texas Coastal History" and David W. Hicks wrote chapter three, titled "Molluscan Ecology and Habitats." Many other experts, both amateur and professional, were consulted in preparation of this tome, and most readers will recognize a number of the names included in the "Acknowledgements" section (lots of COA members, shell clubs, and various professional organizations). One such contributor was Roe Davenport (1939 - 2005) who provided the initial inspiration and push to accomplish this rather daunting project. The "Encyclopedia of Texas Seashels" is dedicated to Roe Davenport.

The "Encyclopedia of Texas Seashells" will likely be used most often as an identification guide, and for this it is aptly suited. Only a truly dedicated researcher of the Gulf regions (Emilio García comes to mind) is likely to turn up a seashell not covered by this book. For most of us this book can well serve as the Gulf Coast seashell Bible. As an identification aide, there are several well thought out and well displayed features. Each species is displayed in clear color photographs that most often include both dorsal and ventral displays and, where needed for clarity, there are magnified views of important shell structures. Species are listed systematically by class and family (with these entries containing descriptive text of the order or family as a whole), then alphabetically by genus and species. Each listing has the scientific name and where applicable the common name. The text for each species includes: "distribution" (including areas outside of Texas), "size" (typical adult size), "description" (color, structure, and any key identification aids), "habitat" (type of habitat and typical depth of occurrence), "remarks" (areas of occurrence, bibliographical references, occasionally notes on junior synonymy), and the final entry (not always present) is "synonym" (known synonyms provided). A few images are pencil drawings when no shell was available. The images are about 2 inches or more in height and are of a sufficient quality that they can be magnified by the reader for a closer look at shell details. The quality of the images is truly superb. A 1mm *Turbonilla fonteini* Jong & Coomans, 1988 is displayed with remarkable clarity and detail, including a magnified view of the protoconch. Finally, if the species in question is from deep water, this is noted in bold just below the common name.

Species accounts are approximately 3/5 of the content of the book. The other 2/5 is made up of some nice-to-have features, some interesting history and biology, an unusual appendix, and the standard index, glossary, and references.

Chapter one by Kim Withers is "Shells in Texas Coastal History." The chapter begins with the geologic history of Texas coasts beginning in the Pleistocene about 18,000 years ago and discusses coastal formation, the shells involved in coastal formation, and early archaic use of shells in what was to become Texas. This is followed by explanations of more recent use of Texas shells as decoration, food, and construction material. The chapter is heavily illustrated with some very interesting photographs.

The second chapter, "Chronology of Marine Malacology

in Texas," by the primary authors, is a "Who's Who" of Texas malacologists as well as entries about the formation of different Texas shell clubs. Some biographical detail is provided for selected authors and institutions. Graph representations are included for species described per author, per year, and cumulatively over time.

The third chapter is a hidden gem in this book. Titled "Molluscan Ecology and Habitats," it is written by David W. Hicks and provides fascinating coverage of the various biotypes or habitats found along and off the Texas coast. He details the characteristics of different bays and estuaries and how they were formed. After a short discussion of why different mollusks are found where they are found, he details the different molluscan habitats found in Texas and what can be found in each one as well as why the habitat has the fauna it has. Nine different habitats are discussed in depth and color plates are provided of both the habitat and the typical fauna found in each one. These vary from "mangrove habitats" with three habitat photos and a color plate with an assemblage of five mollusk species common to this habitat, to "sandy beach habitats" with eight habitat images and a color plate with a 21 species assemblage, to the Stetson Bank habit with eight habitat images and two color plates with an assemblage of 53 species illustrated. Of course, all of these species are illustrated in the "species accounts" section, but here are grouped the most commonly encountered species in each of nine biotypes.

Chapter four is a short guide to collecting, trading, buying, cleaning, and curating seashells. Chapter five is "General Features of Mollusks" and is one of the better attempts I have encountered at describing the physical characters of each class. The color images labeling the various parts of a shell (whether chiton, bivalve, gastropod, or scaphopod) are the clearest and easiest to understand I have seen.

Chapter six is the "species accounts," already discussed. Following this is the appendix. This is a classification and checklist of the species covered in the book. It is systematically arranged and presents scientific name, common name, shell size, habitat, and depth of occurrence. This listing does not really provide any information not available in the species accounts, but it is a nice quick reference listing of genera and species within each family. After the appendix is a rather thorough glossary, a list of references, and the index.

And that is Jean Andrews's "Grandson of Sea Shells of the Texas Coast." A valuable reference tool that needs to be in anyone's library if they collect or research Texas and Gulf of Mexico seashells. Like any book of this size, there are bound to be errors (see the sidebar), but overall it is a monumental work that was well done. Finally a word or two about reading this book. Some readers will undoubtedly leaf through the book once or twice and then sit it on a shelf with other seldom referenced volumes. Others will use it occasionally to confirm species identifications or to find the correct spelling of certain shell names, but again it will sit mostly unread. I ask that when you buy this book, and many of you will, you actually sit down and read through the early chapters. There is a lot of well presented information that I believe many readers will enjoy. Certainly some sections will bog down a bit in detail, but just skim ahead a bit and you are certain to find more interesting and maybe intriguing facets of Texas seashells.

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As I stated in the review, I believe the "Encyclopedia of Texas Seashells" is a valuable "need-to-have" reference that belongs in any sheller's (professional or amateur) library. That being said, a work of this magnitude always has a few errors. While the authors did what they could to eliminate errors, a few always creep in. There are a couple that should be noted. On page 228 there is a color plate showing three *Vexillum* specimens. All three are identified as variations of *V. pulchellum* (Reeve, 1844), but according to Emilio García, shell number three, a shell he loaned to the authors for illustration purposes, is actually *V. arestum* (Rehder, 1943). It was so identified at the time by Emilio, but somehow things got crossed up. The authors list the *aresterum* name as a synonym under the originally assigned genus *Pusiolina*. Emilio also points out that the size of 106mm given for *Mitra antillensis* Dall, 1889, a deep water species, is not correct for this species in the Gulf. In the Gulf the shells are seldom more than 35mm in length; the larger size is for this species when taken elsewhere, such as off the east coast of Florida or North Carolina. Emilio believes there are probably two distinct species involved here. On page 175, *Cleotrivia candidula* (Gaskoin, 1836) is probably *Dolichupis leei* Fehse & Grego, 2010 (newly described in *Visaya* vol. 11, no. 6). Other corrections will hopefully (according to one of the authors) be printed online as needed.

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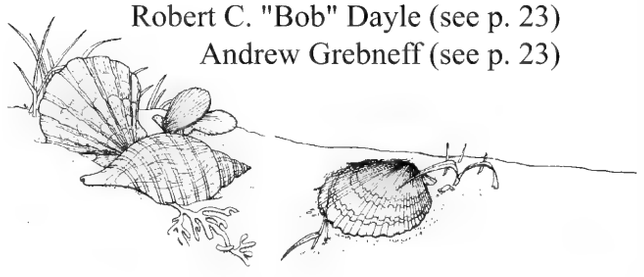
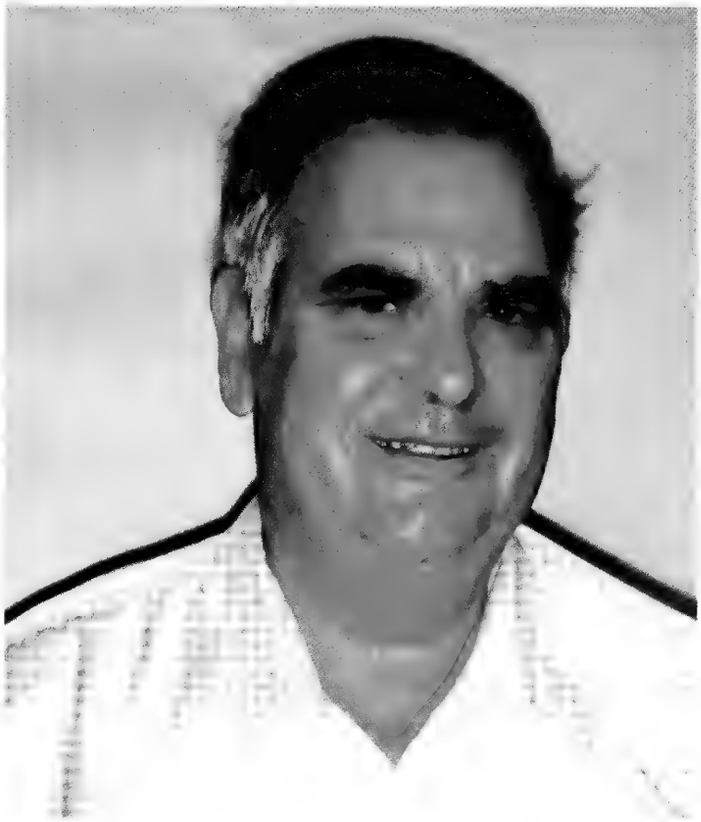
Quarterly Journal of the Conchologists of America, Inc.

In memoriam:

Robert C. "Bob" Dayle (see p. 23)
Andrew Grebneff (see p. 23)



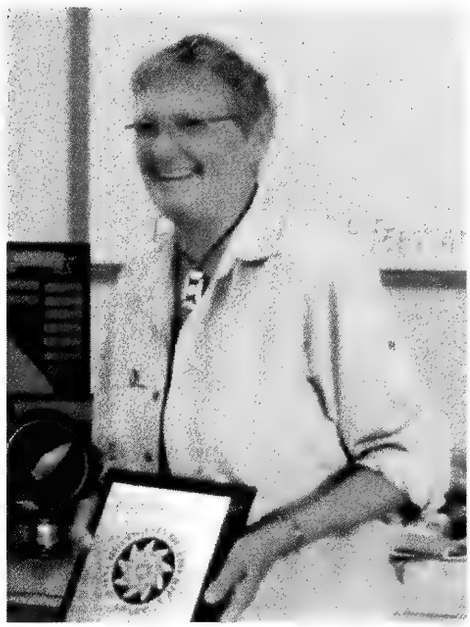
Sydney Shell Club Shell Show 24 October 2009



The annual Sydney Shell Club Shell Show was held on 24 October 2009. As in previous years it was a popular and well-attended event. This year's winner of the COA Award was Trevor Appleton for his display of five cases of seashells titled "Variation Within a Species - Volutidae." His display showcased the rich variety, especially of color and pattern, found in this fascinating family. Trevor's cases took up about three linear meters, out of a total of 30 meters for the shell show displays.

The "Sydney Shell Club" (The Malacological Society of Australasia - NSW Branch) meets on the 4th Saturday of each month at the Ryde Eastwood Leagues Club, Ryedale Road, West Ryde (a suburburd of Sydney), New South Wales, Australia. Meetings commence at 2.00 p.m. Annual membership fee is $40 for adults, $25 for students or pensioners (looks like a break for many COA members!), $15 for juniors, and $5 for additional family members. Membership includes the *Sydney Sheller News Letter* and Australian postage (overseas is extra). Research support is provided to students of Malacology of all ages via the Mollusc Research Awards. Contact for the club is the president, Steve Dean, at: president@sydneyshellclub.net

The Keppel Shell Club Show 10-11 July 2010



The 2010 Keppel Bay Shell Show was held in Yeppoon, Australia. This year's show was well attended despite a late change of locality and a bit of wet weather. The originally planned venue at the Yeppoon Town Hall was unavailable, so the show was moved to the somewhat smaller, but readily available "cafeteria" at the Yeppoon Show Grounds (thanks to the Yeppoon Show Society). As it turned out, this facility had more accessible parking and was quite workable. At the end of two days we had lots of smiles from attendees, exhibitors, shell club members, and shell dealers. Lots of hard work by many people assured another successful show.

This year's COA Award went to Heather Smith who traveled from New Zealand to present her display, "Conchology and Philately," a very colorful display of stamps with shell images and the matching shells. Heather's other displays also did quite well. She won the Nancy Plumb Memorial Trophy (Pectens <50mm), the Ozzie Rippingale Memorial Trophy (Muricidae, <60mm), the Stella Mackay Memorial Trophy ((land snails, <50mm), the Kev Phelps Memorial Trophy (colorful shells), and the Lorna & Ivan Marrow Trophy (conchology & philately).

New generic assignments for Strombidae: A summary of recent changes

by Winston A. Barney

Collectors have been drawn to the family Strombidae for many years by its many beautiful and showy species and their relative abundance and ease of acquisition. One factor in their popularity, especially for snorkelers and waders, is the availability of many species in shallow water. In addition, by monitoring the many dealers' websites and lists, a person may expect to locate and acquire a nearly complete collection of species in a matter of years – even if he or she never sets foot into the water. A few species remain rare and are seldom available on dealers' lists, but most of them are collectable with patience and diligent inquiries.

Since Abbott's 1960 and 1961 monographs regarding the Indo-Pacific genera *Strombus* and *Lambis,* respectively, many changes have come about in the taxonomy of the entire family. During those almost fifty years, eight new genera have been described and the remaining subgenera into which Abbott grouped the species are now being treated as full genera. Furthermore, a handful of species and subspecies have been newly described or elevated, as well as a few new forms. This intense taxonomic activity has created a multigeneric arrangement that more accurately classifies the species.

In spite of all of this activity, many collectors and most sea shell dealers still adhere to Abbott's concept of the genus *Strombus*. The reasons are simple. Casual collectors have to remember only one genus, and dealers, who understandably bow to the collectors, don't have to split hairs or raise hackles by listing the multi-genera nomenclature. The same situation exists in the families *Cypraeidae, Conidae,* and *Muricidae.*

Malacologists and specialists in the family Strombidae have been busily reporting the growing body of taxonomic changes, but much of the work is published in European periodicals which reach few American collectors. In 2002, Kronenberg & Vermeij reported, "challenges to Abbott's taxa," and held that, "Abbott…was typically vague about the characters that distinguish higher taxa, with the result that the lines among his subgenera of *Strombus* are blurred and arbitrary."

Klaus Bandel (2007) stated, "The genus *Strombus* has been differentiated into a number of subgenera which have been regarded to represent genera by different authors." And in 2009, Kronenberg, Liverani, and Dekker stated, "...it has been advocated to consider the strombid taxa employed as subgenera by Abbott (1960) as full genera..." Likewise, the subgenera of *Lambis*, as described by Abbott in 1961, are now recognized as full genera. The genus *Tibia* is now placed in the family Rostellariidae and the genus *Terebellum* is now in the family Seraphidae.

Finally, the phylogenetic studies of Latiolais (2003), Simone (2005) and Latiolais, Taylor, Roy, and Hellberg (2006) have pointed out previously unrecognized morphological relationships that give credence to new groupings within the entire family. Others are now suggesting that the genus *Lambis* originated within the genus *Strombus*, constituting a sister clade to *Sinustrombus taurus* and *S. sinuatus*.

A great deal of credit must be given to those workers who have poured over early manuscripts and hunted down type specimens in order to verify facts and update the nomenclature. They do the work. We enjoy the fruits of their labors. Their names can be found in the list of recent literature at the end of

this article. We thank them for their taxonomic expertise and quest for accuracy. We should also give credit to those who invest their time and riches into phylogenetic analyses that search back through ages before the birth of conchology to uncover the true relationships of our treasures.

In using this multi-genera version of the family, the reader should note the changes in spelling of the species which are necessary to agree with the gender of the genus. Attention should also be given to the correct usage of parentheses in the author citation, showing that a change of genus has occurred since the original description.

Checklist of genera in the family STROMBIDAE

Conventions:
1. The genera are listed chronologically by description dates.
2. The species are listed chronologically by description dates, except that the first species listed in each genus is the type of that genus.
3. Subspecies are indented.
4. Although various forms of species are undeniable, most forms have been omitted from this list. Hybrids, although a number have been identified, are also omitted.

Genus *STROMBUS* Linnaeus, 1758
- *Strombus pugilis pugilis* Linnaeus, 1758
  - *Strombus pugilis worki* Petuch, 1994
- *Strombus alatus* Gmelin, 1791
- *Strombus gracilior* Sowerby, 1825

Genus *LAMBIS* Röding, 1798
- *Lambis lambis* (Linnaeus, 1758)
- *Lambis truncata truncata* (Lightfoot, 1786)
  - *Lambis truncata sebae* (Kiener, 1843)
- *Lambis crocata crocata* (Link, 1807)
  - *Lambis crocata pilsbryi* Abbott, 1961

Genus *CANARIUM* Schumacher, 1817
- *Canarium urceum urceum* (Linnaeus, 1758)
  - *Canarium urceum incisum* (Wood, 1828)
  - *Canarium urceum orrae* (Abbott, 1960)
- *Canarium labiatum labiatum* (Röding, 1798)
  - *Canarium labiatum olydium* (Duclos, 1844)
- *Canarium erythrinum* (Dillwyn, 1817)
- *Canarium mutabile* (Swainson, 1821)
- *Canarium rugosum* (Sowerby, 1825)
- *Canarium scalariforme* (Duclos, 1833) [According to Kronenberg, this name should have priority over the name *Canarium haemastoma* (Sowerby, 1842)]
- *Canarium maculatum* (Sowerby, 1842)
- *Canarium fusiforme* (Sowerby, 1842)
- *Canarium helli* (Kiener, 1843)
- *Canarium microurceum* Kira, 1959
- *Canarium ochroglottis* (Abbott, 1960)
- *Canarium klineorum* (Abbott, 1960)
- *Canarium wilsonorum* (Abbott, 1967)
- *Canarium betuleti* (Kronenberg, 1991)

Genus *HARPAGO* Mörch, 1852
- *Harpago chiragra chiragra* (Linnaeus, 1758) [*Harpago chiragra rugosa* (Sowerby, 1851) is actually the male form of this species]
  - *Harpago chiragra arthritica* (Röding, 1798)

Genus *MILLEPES* Mörch, 1852
- *Millepes millepeda* (Linnaeus, 1758)
- *Millepes digitata* (Perry, 1811)
- *Millepes scorpius scorpius* (Linnaeus, 1758)
  - *Millepes scorpius indomaris* (Abbott, 1961)
- *Millepes robusta* (Swainson, 1821)
- *Millepes violacea* (Swainson, 1821)
- *Millepes arachnoides* (Shikama, 1971)

Genus EUPROTOMUS Gill, 1870
- *Euprotomus aurisdianae* (Linnaeus, 1758)
- *Euprotomus aratrum* (Röding, 1798)
- *Euprotomus bulla* (Röding, 1798)
- *Euprotomus vomer* (Röding, 1798)
- *Euprotomus hawaiensis* (Pilsbry, 1917)
- *Euprotomus chrysostomus* (Kuroda, 1942)
- *Euprotomus iredalei* (Abbott, 1960)
- *Euprotomus aurora* Kronenberg, 2002

Genus *CONOMUREX* Fischer, 1884
- *Conomurex luhuanus* (Linnaeus, 1758)
- *Conomurex fasciatus* (Born, 1778)
- *Conomurex coniformis* (Sowerby, 1842)
- *Conomurex decorus* (Röding, 1798)
- *Conomurex persicus* (Swainson, 1821)

Genus *GIBBERULUS* Jousseaume, 1886
- *Gibberulus gibberulus gibberulus* (Linnaeus, 1758)
  - *Gibberulus gibberulus gibbosus* (Röding, 1798)
  - *Gibberulus gibberulus albus* (Mörch, 1850)

Genus *LENTIGO* Jousseaume, 1886
- *Lentigo lentiginosus* (Linnaeus, 1758)
- *Lentigo pipus* (Röding, 1798)

Genus *TRICORNIS* Jousseaume, 1886
- *Tricornis tricornis* (Lightfoot, 1786)
- *Tricornis oldi* (Emerson, 1965)

Genus *LOBATUS* Iredale, 1921
- *Lobatus raninus* (Gmelin, 1791)
- *Lobatus gigas* (Linnaeus, 1758)
- *Lobatus gallus* (Linnaeus, 1758)
- *Lobatus costatus* (Gmelin, 1791)
- *Lobatus goliath* (Schröter, 1805)
- *Lobatus peruvianus* (Swainson, 1823)
- *Lobatus galeatus* (Swainson, 1823)

Genus *LABIOSTROMBUS* Oostingh, 1925
- *Labiostrombus epidromis* (Linnaeus, 1758)

Genus *DOLOMENA* Iredale, 1931
- ***Dolomena puchella* (Reeve, 1851)**
- ***Dolomena plicata* (Röding, 1798)**
- ***Dolomena variabilis* (Swainson, 1821)**
- ***Dolomena dilatata* (Swainson, 1821)**
- ***Dolomena columba* (Lamarck, 1822)**
- ***Dolomena labiosa* (Wood, 1828)**
- ***Dolomena sibbaldi* (Sowerby, 1842)**
- ***Dolomena athenia* (Duclos, 1844)**
- ***Dolomena swainsoni* (Reeve, 1850)**
- ***Dolomena hickeyi* (Willan, 2000)**

Genus *DOXANDER* Iredale, 1931
- ***Doxander vittatus vittatus* (Linnaeus, 1758)**
  - ***Doxander vittatus apicatus* (Man in't Veld & Visser, 1993)**
  - ***Doxander vittatus entropi* (Man in't Veld & Visser, 1993)**
- ***Doxander campbelli* (Griffith & Pidgeon, 1834)**
- ***Doxander japonicus* (Reeve, 1851)**

Genus *VARICOSPIRA* Eames, 1952
- ***Varicospira cancellata* (Lamarck, 1816)**
- ***Varicospira crispata* (Sowerby, 1842)**
- ***Varicospira tyleri* (H & A Adams, 1864)**
- ***Varicospira kooli* Moolenbeek & Dekker, 2007**

Genus *LAEVISTROMBUS* Abbott, 1960
- ***Laevistrombus canarium* (Linnaeus, 1758)**
- ***Laevistrombus turturella* (Röding, 1798)**
- ***Laevistrombus guidoi* Man in't Veld & De Turck, 1998**

Genus *MIRABILISTROMBUS* Kronenberg, 1999
- ***Mirabilistrombus listeri* (Gray, 1852)**

Genus *TERESTROMBUS* Kronenberg & Vermeij, 2002
- ***Terestrombus fragilis* (Röding, 1798)**
- ***Terestrombus terebellatus* (Linnaeus, 1758)**
- ***Terestrombus afrobellatus* (Abbott, 1960)**

Genus *TRIDENTARIUS* Kronenberg & Vermeij, 2002
- ***Tridentarius dentatus* (Linnaeus, 1758)**

Genus *MARGISTROMBUS* Bandel, 2007
- ***Margistrombus marginata* (Linnaeus, 1758)**
- ***Margistrombus succincta* (Linnaeus, 1767)**
- ***Margistrombus septima* (Duclos, 1834)**
- ***Margistrombus sowerbyorum* (Visser & Man In't Veld, 2005)**

Genus *MINISTROMBUS* Bandel, 2007
- ***Ministrombus minimus* (Linnaeus, 1771)**

Genus *PERSISTISTROMBUS* Kronenberg & Lee 2007
- ***Persististrombus granulatus* (Swainson, 1821)**
- ***Persististrombus latus* (Gmelin, 1791)**

Genus *SINUSTROMBUS* Bandel, 2007
- ***Sinustrombus taurus* (Röding, 1798)**
- ***Sinustrombus sinuatus* (Lightfoot, 1786)**
- ***Sinustrombus latissimus* (Linnaeus, 1758)**

Genus *THERSISTROMBUS* Bandel, 2007
- ***Thersistrombus thersites* (Swainson, 1823)**

Genus *BARNEYSTROMBUS* Blackwood, 2009
- ***Barneystrombus kleckhamae* (Cernohorsky, 1971)**
- ***Barneystrombus boholensis* (Mühlhäusser, 1981)**

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I commend the gracious help provided by Tim Blackwood of Cohasset, Minnesota, in preparing and proofreading this article. His passion for the family Strombidae is tireless and his efforts are selfless.

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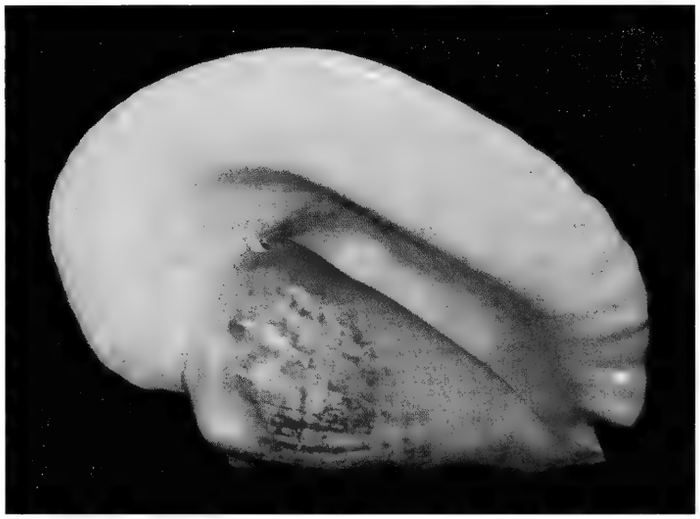
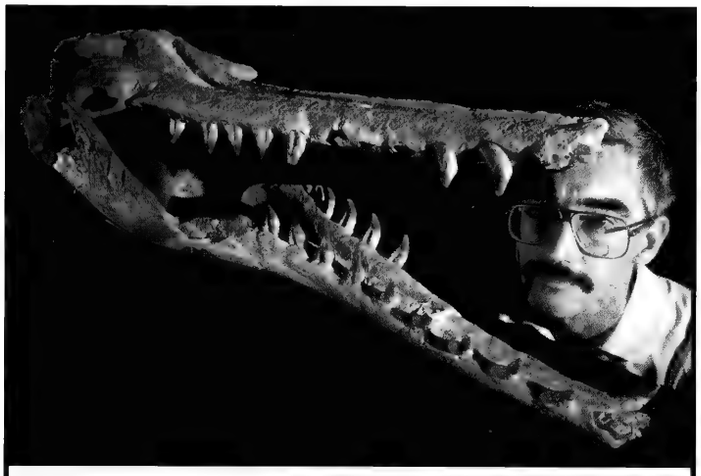


The large and the small in the Strombidae: *Lobatus goliath* at 13in and *Canarium scalariforme* at 13mm.



Andrew Grebneff (1959 - 2010), shown above with a squalodont fossil, worked at the University of Otago, Dept of Geology, Dunedin, New Zealand, as a fossil preparator and was an avid shell collector. He was especially interested in *Busycon*, but in fact collected and showed an interest in most molluscan families. Most of us knew him through Conch-L and email contacts. Surprisingly, many of us formed a close relationship with Andrew, even though never meeting face-to-face. Someone who did meet Andrew face-to-face is Marcus Coltro of Femorale. Marcus writes:

> Andrew had an eclectic way to collect shells and fossils – not from a specific group, but from all families and classes. Although he wrote me for the first time in 1996, our contacts were more frequent after…we started exchanging innumerous e-mails about shells. In 2005 I asked about the possibility of visiting him in Dunedin to collect shells. At first he said there were not many shells to collect but he could arrange a dredging trip on a research boat. Not necessary to say that our trip was very successful with his help and after that our friendship got stronger. His wife Kala and two children Karishma and Aden were very nice on my first trip and even nicer on my following trip in 2009 when I stayed at their home. They did not complain a bit even after I cleaned lots of stinking shells on their bathroom! I spent several days collecting with him on both trips when he took me to his secret collecting spots. He was very sharp and intelligent, and was probably the best professional on fossil preparation in New Zealand. I am very proud to have met such nice guy and will certainly miss his acid comments on Conch-L!

Andrew was always willing to offer his expertise on Recent or fossil shells and there are quite a few collections that benefitted from his largesse with shells he collected over the years. If he knew someone was working on a specific molluscan family, he often willingly offered to loan, trade, or give specimens he thought might help that individual in his or her research. Another passion of Andrew's was VW busses - something he took a bit of kidding about from some of us.

Robert C. "Bob" Dayle (1946 - 2010), shown above in his favorite habitat, was "Mr. Hawaiian Cowrie," publishing numerous papers on evolution, species status, and variation within and between cowrie species. Bob is perhaps best known in the shell community for his development of one of the best literature resources for Cypraeidae, the archive site *The Captured Cowry*, available on the web at: http://www.cowrys.org/capcowry/index.html This site is first of all compilations and indices (by author, date, and species) of every cowrie article published during the 50-year run of *Hawaiian Shell News*. This comprehensive resource has the added value that Bob corrected known errors in early articles by providing the corrections in brackets. The site also contains movies of living cowries, an index of Strombidae articles in *Hawaiian Shell News*, and an index of E. A Kay's "Hawaiian Marine Shells." Bob served several years in the United States Navy (stationed in Spain, Alaska, Hawaii, and Guam) and took up SCUBA while stationed in Hawaii. He finished his US Naval service in Hawaii and took up professional diving for a time. He then moved to Texas, spent some time in Germany, and finally moved back to Hawaii in 1984 when he began diving and shell collecting in earnest. By 1988 he began analyzing the specimens collected to try to arrive at some understanding of evolution, relationships, and ecology. He continued this activity after moving back to the continental US, first to Cambridge City, Indiana, and then Knightstown, Indiana. According to his wife, Alice Hartman, he worked on his shells up to his last night. On *The Captured Cowrie* web site, Bob described himself as, "…just some guy who likes the ocean and collecting shells, for the most part." On the same page he stated that he, "came to understand that stuff happens and luck happens. But there are always some who seem to miss the real points of shelling, which are (to this writer's mind) camaraderie in sharing your finds with other like-minded persons and adding to our understanding of the splendid animals which produce such stunning works of beauty." His email "handle" was *makuabob* and under that handle he provided knowledge and insight, as well as a lasting heritage in *The Captured Cowrie*.

Cozumel, Mexico

by Jim Lyle

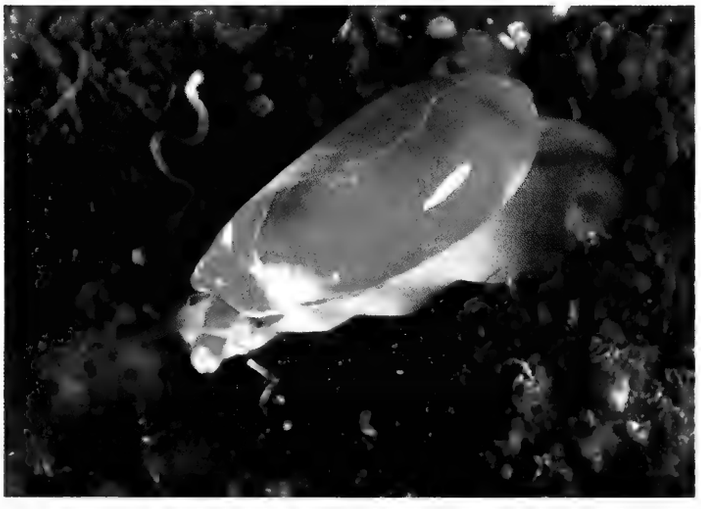
Cozumel (Mayan for Island of the Sparrows, Kùutsmil in modern Mayan), Mexico, is a small (16km by 48km) island located 20km off the eastern coast of the Yucatan Peninsula and 60km south of Cancún. The largest town on the island is San Miguel de Cozumel with a population of about 71,000. The island is a well-known tourist destination, famous for its SCUBA and snorkeling. Cozumel is fairly flat and is mostly limestone, containing numerous caves as well as several cenotes, sink holes filled with ground water. Many of the cenotes are suitable for SCUBA or snorkeling, but be forewarned, you must be a qualified cave diver and be registered with the government. The surrounding ocean provides the majority of income for island residents, either directly through fishing and charter operations or indirectly through the many hotels and restaurants that support the tourist trade. Cozumel is a regular stop for Caribbean cruise ships.

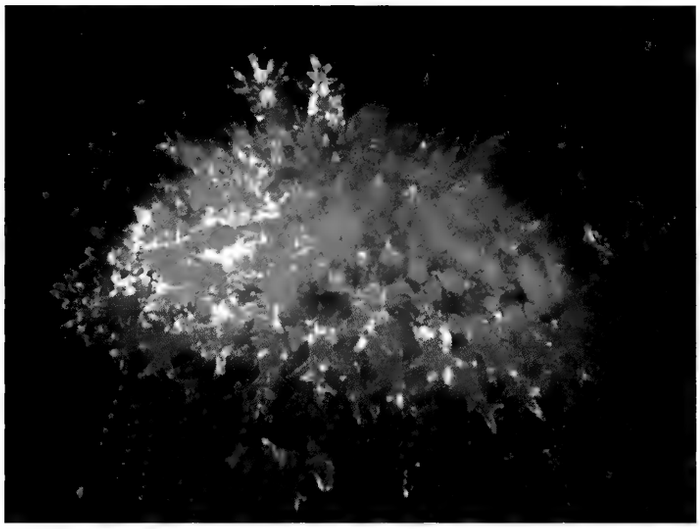
There are a number of Mayan ruins on the island, although none as spectacular as found on the mainland. The Maya are thought to have settled on the island a thousand years ago, but even earlier artifacts (Olmec) have been discovered. The Spanish arrived in 1518 and many of the Mayan temples were subsequently destroyed.

Diving off Cozumel is truly spectacular with clear waters highlighting the numerous Caribbean species. Spectacular coral reefs are protected by the island geography and the Mexican government established the Cozumel Reefs National Marine Park in 1996 to help maintain the pristine nature of the area. These images are a few of the many mollusks I encountered on my last trip to this area.

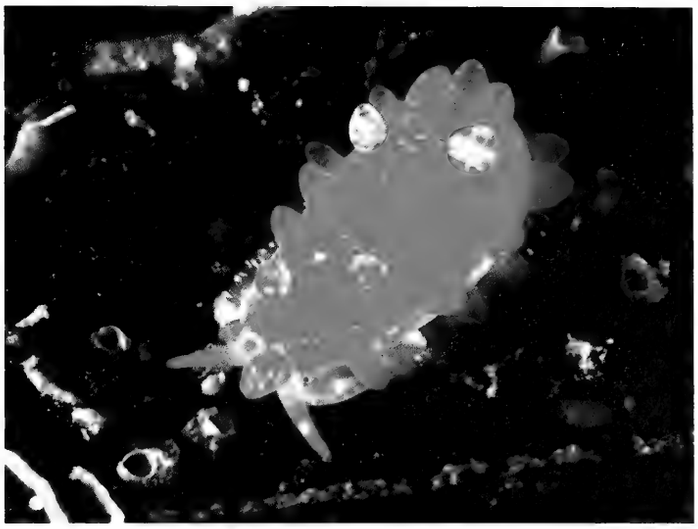
Jim Lyle -- jameslyle@roadrunner.com

Left: *Charonia variegata* (Lamarck, 1816), the Atlantic Triton, on the prowl for tasy ecinoderms.
Below: *Volvarina albolineata* d'Orbigny, 1842, a small but nicely patterned marginellid.

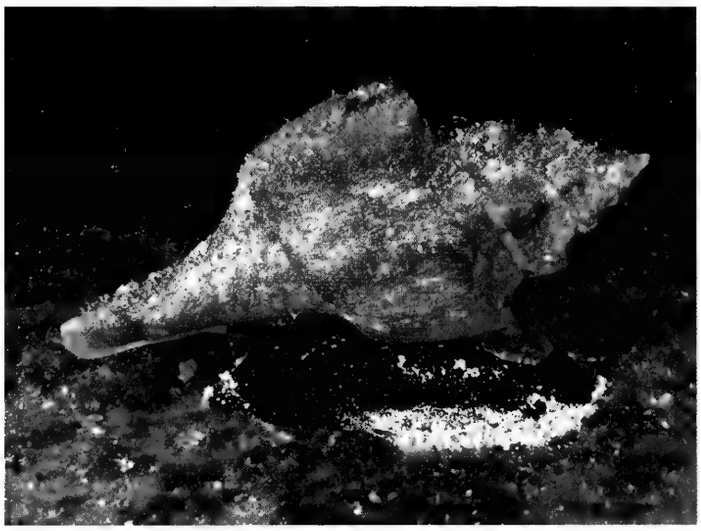




Erosaria acicularis (Gmelin, 1791), the Atlantic yellow cowrie.

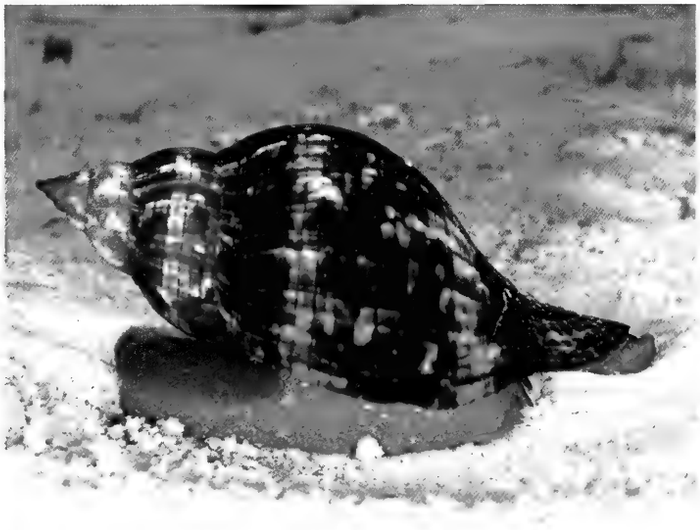


A small unidentified marginellid with fully extended mantle.

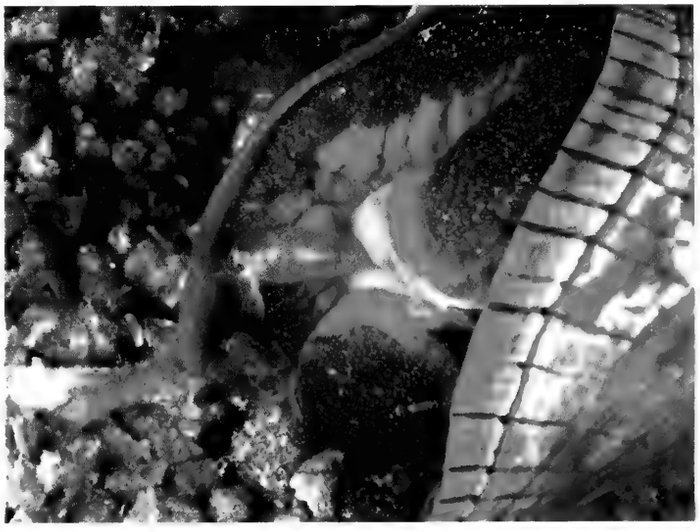


Turbinella angulata (Lightfoot, 1786), the West Indian chank.

Turbinella angulata egg case.



Fasciolaria tulipa (Linnaeus, 1758), the true tulip.



Fasciolaria tulipa egg case being laid. Jim Lyle: JamesLyle@roadrunner.com

Are those Mexican slippers?

J.M. Inchaustegui

At a recent shell auction of the Houston Conchology Society, sponsored by the Houston Museum of Natural Science, I saw two *Conus recurvus* Broderip, 1833,* in one Zip-Lock bag on a silent auction table. Because the last bid was quite low, I placed a bid on them and periodically returned to raise my bid if someone had out-bid me. I heard this lady sheller complain to her companion "I am having trouble with #12 (my number). Every time I bid on those cones, he comes right behind me and raises the bid!" When the bidding was finished I had gotten these two cones at a very nice price. Little did I know that I had done better than I realized, since rather than two shells there were three. I will explain below.

At home as I was examining the shells I noticed a strange "hump" on one of them and a peculiar "flaring" of the outer lip near the shoulder, opposite the "hump." This cone had an intact periostracum, which I wanted to preserve, so I gently pushed on the "hump" with my thumb, but it would not move or come off. I put the shell in cool water to soak a minute or and when I pushed again, the "hump" came off. It turned out to be a little 21mm *Crepidula* that had attached itself (probably while very young) to the live cone and did not come off after the shell was collected and cleaned. So I had three shells in the Zip-Lock bag, not two as I had originally thought. As I examined the peculiar flared lip, which at first I thought was due to a "freak" growth, I began to surmise that the "flaring" was caused by the slipper shell crowding the cone's aperture. As the cone grew its last whorl it flared the lip out to accommodate the *Crepidula*.

I have tentatively identified the "hump" as *Crepidula excavata* (Broderip, 1834) of which A. Myra Keen says in her book "Sea Shells of Tropical West America," "Lower California throughout the Gulf and south to Panama, on other shells, especially *Polinices."* This little shell probably never read the book because here it was on a living *Conus*.

*Ed note: *Conus recurvus* Broderip, 1833, is apparently no longer valid as the type does not match shells of that name, the correct name is probably *Conus* (*Kohniconus*) *emarginatus* Reeve, 1844.

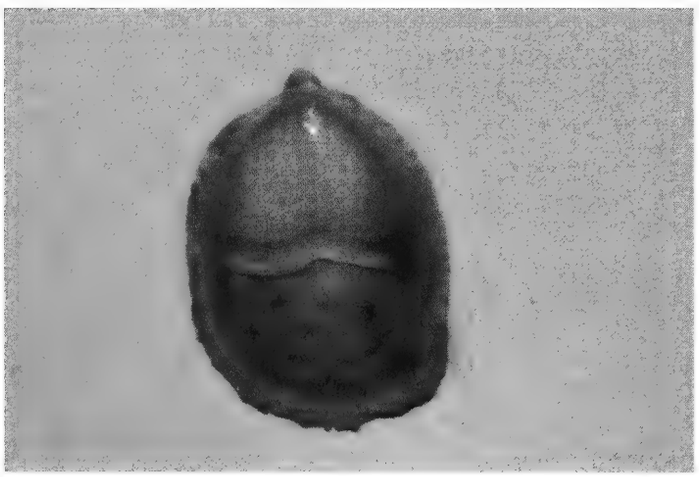


Fig. 1 On the left is the 53mm *Conus recurvus* Broderip, 1833 Manzanillo, Mexico, collected by Theresa Stelzig on 1 Jan 1975, with the "hump," flared lip, and intact periostracum. On the right for comparison is a typical *C. recurvus* from Guaymas, Mexico, collected by Ruth Anne Sparlin in 1988.

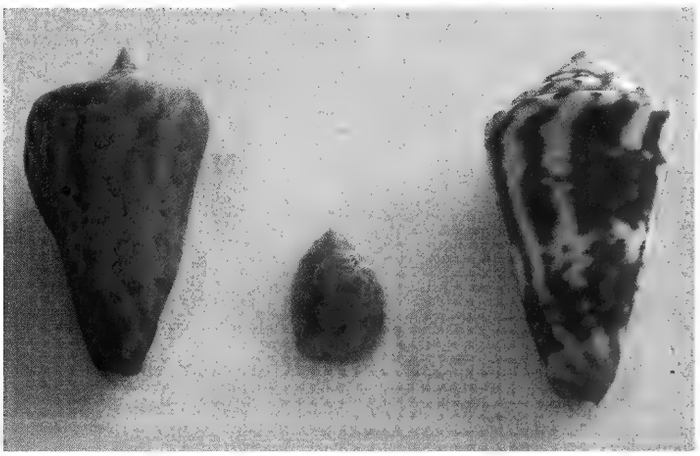


Fig. 2 A dorsal view of the cones with the 21mm *Crepidula excavata* between them. Notice that the color of the slipper shell mimics the color of the host *Conus* on the left, surely no coincidence.

Fig. 3 (left) An apertural view of the hitch-hiking *Crepidula*.

Photos by the author. I have extra *C. recurvus* as well as other cones that I would like to trade.

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Report on the Epitoniidae of the East China Sea- Part 2

Lenny Brown

This is my second Report on the Epitoniidae of the East China Sea. It covers species not discussed in my previous report, *American Conchologist* 37(2), 2009. As I noted in the prior article, that first report was only preliminary and further collecting would undoubtedly document additional epitoniid species not discussed in that article. As expected, that indeed proved to be the case and the additional epitoniid species identified subsequent to the publication of the first report are listed below. Readers interested in additional information on the epitoniid species in this section of the Pacific Ocean are urged to read my prior article on the subject.

Species List

Amaea cf. gratissima (Thiele, 1925) (Fig. 1) Thiele (1925:134 [100], pl. 11, fig. 2) described *Scala gratissima* based on a specimen collected off Dar-es-Salaam [Tanzania] at a depth of 404m. The holotype of *Scala gratissima* is 5.7mm in length and is illustrated in Fig. 2. The correct generic placement of this species is a question. In Weil, *et. al.* (1999: 88), this species was provisionally placed in the genus *Eccliseogyra*. Species in *Eccliseogyra* have ribbed protoconchs. Because of the smooth protoconch evident in Fig. 2, however, together with the cancellate sculpture on the teleoconch whorls and the strong basal disk, it is my opinion that this species actually belongs in the genus *Amaea*. While the specimen from the East China Sea illustrated in Figure 1 is 19mm in length, making it more than three times as large as Thiele's holotype of *S. gratissima*, it is otherwise quite similar to the species described by Thiele. To date, I have seen only a few examples of this species from the East China Sea. None of the specimens had any information regarding the depth at which they were collected, however, the fact that I have seen so few specimens leads me to suspect that this species is found in deep water.

Amaea inexperta (Brown & Weil in Weil, *et al.,* 1999) (Fig. 3) This species was described based on material from Singapore. The illustrated specimen extends the known range of this species north to the East China Sea.

Amaea (?) *rubigosola* Lee, 2001 (Fig. 4) This species was discussed but not figured in the first report.

Cirsotrema edgari (de Boury, 1912)

Epitonium cf. eximiellum (Masahito, Kuroda & Habe, in Kuroda, *et. al.*, 1971) (Fig. 5)

Epitonium extenuicostum (de Boury, 1913) (Fig. 6) De Boury (1913: 82) proposed his replacement name for this species because *Scalaria tenuicostata* G. B. Sowerby, II, 1844, is preoccupied by *Scalaria tenuicostata* Michaud, 1830.

Epitonium fucatum (Pease, 1861) (Fig. 7)
Epitonium koshimagani (Nakayama, 1991) (Fig. 8)

Epitonium sakuraii (Kuroda & Habe in Habe, 1961) (Fig. 9)

Epitonium tokyoense Kuroda, 1930 (Fig. 10)

Epitonium umbilicatum (Pease, 1869) (Fig. 11)

Epitonium yangi Brown, 2010 (Fig. 12) This species was described in the June 2010 issue of *Novapex*. While similar to *Epitonium spyridion* Kilburn, 1985, a species illustrated in the previous report on the Epitoniidae of the East China, it can be distinguished from *E. spyridion* by the combination of more numerous costae with peaks set closer to the sutures and the more numerous spiral lines between the costae. In addition, *E. yangi* lacks the fenestrate sutures present in *E. spyridion*.

Fragilopalia nebulodermata Azuma, 1972 (Fig. 13)

Gyroscala iwaotakii (Azuma, 1961) While Azuma placed this species in the genus *Amaea in the* original description, because of the combination of numerous costae and the weak basal keel, I follow Nakayama (2003: 79) who transferred this species to the genus *Gyroscala.*

Opalia mormulaeformis (Masahito, Kuroda & Habe, in Kuroda, *et. al.*, 1971) (Fig. 14)

Surrepifungium costulatum (Kiener, 1838) (Fig. 15)

Acknowledgements: I want to thank Dr. Tomas Rintelen at the Zoological Museum, Berlin for providing the photographs of the holotype of *Scala gratissima* and Tom Eichhorst who photographed the illustrated specimens and prepared the plates for this article.

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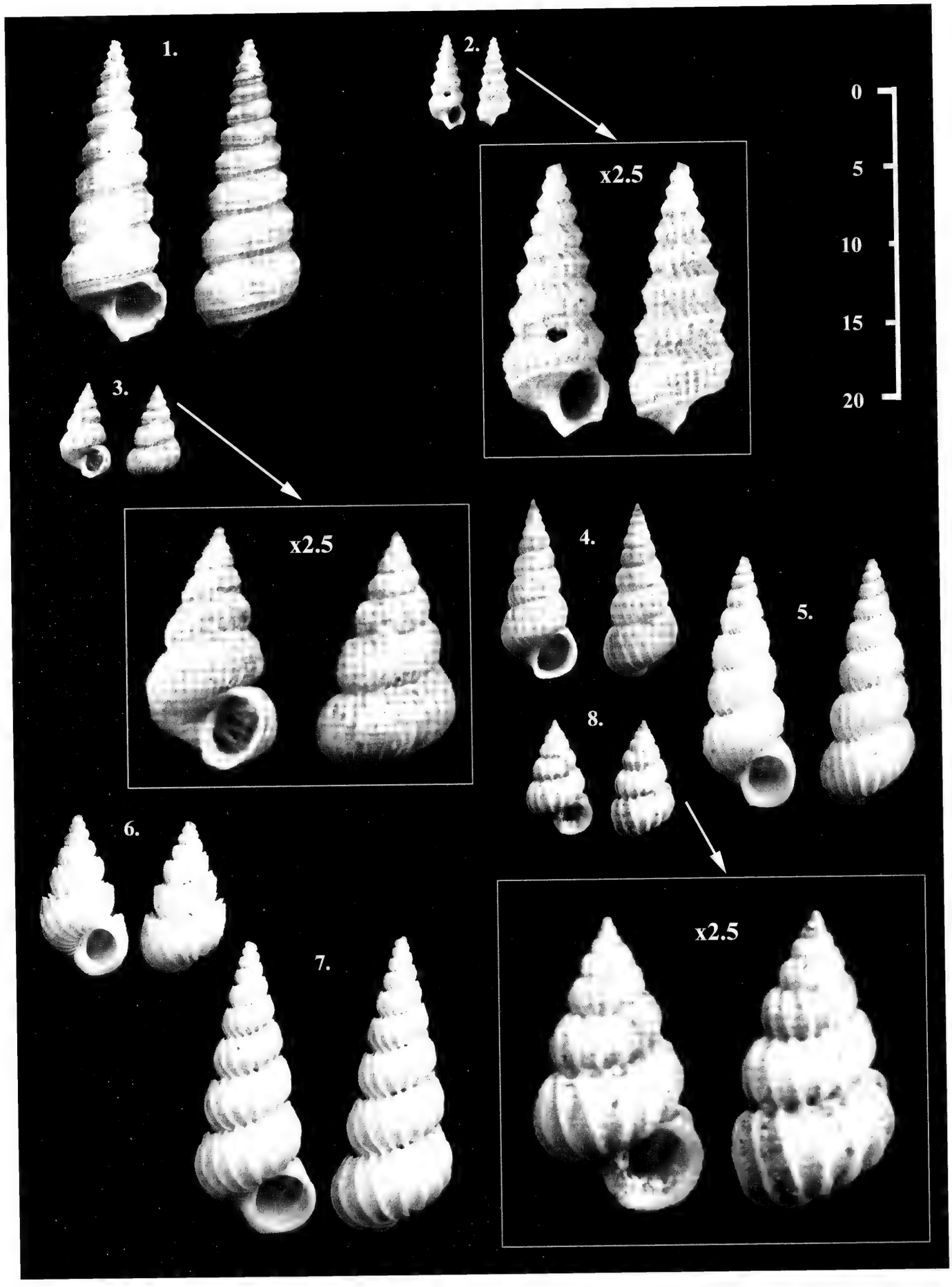
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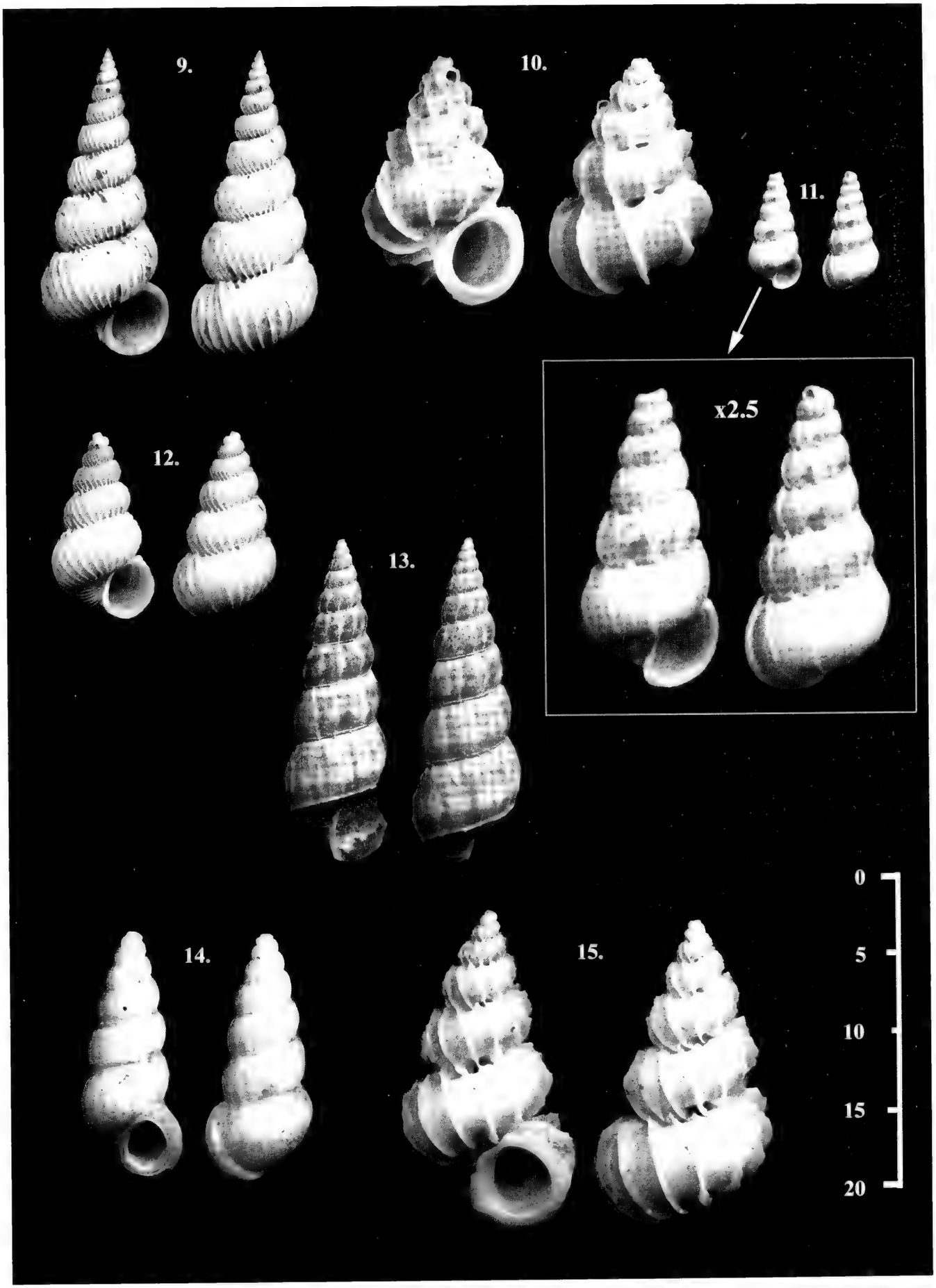
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A reclusive Tennessee native snail: *Anguispira picta* (Clapp, 1920) (Discidae)

by Tom Eichhorst (images from Doug Shelton and the Alabama Malacological Research Center (AMRC) & the author)

The land snail genus *Anguispira* Morse, 1864, is widespread across most of the eastern to midwestern United States and from Florida in the South to Canada in the North. It is part of the family Discidae, and most people in both the United States and Europe have seen other common genera in this family, *Discus* and *Punctum*, small disk-shaped shells, often seen after turning over a stone or cleaning up dead leaf debris. There are also a couple of dozen genera of Discidae throughout islands in the Pacific. In the U.S., most species of *Anguispira* seem to have been grouped under the catch-all genus *Helix* when first described. This was quickly resolved as various authors separated out the genus *Anguispira*. The type species is *Anguispira alternata* (Say, 1816) from the northeastern U.S. and Canada. *Anguispira* are typically not diminutive like other genera within the family, but rather of an average size of around 15-20mm or more. This means they are rather easily collected and probably reside in most U.S. land snail collections - except, maybe, for one species from Tennessee.

Anguispira picta (Clapp, 1920), the painted snake coiled forest snail or Buck Creek snail or painted tigersnail, was first discovered on a limestone outcropping in a small valley called Buck Creek Cove, southwest of Sherwood, Franklin County, Tennessee, in 1906. G.H. Clapp published the description of the snail in 1920 using the name *Pyramidula picta*. In 1948 Pilsbry assigned it to the genus *Anguispira* and relegated it to subspecies status as *Anguispira cumberlandiana picta*. This was probably based on the fact that *Anguispira cumberlandiana* is found in almost all of the territory surrounding Buck Creek Cove. In 1976, Alan Solem determined that *A. picta* was indeed a distinct species based upon a study of penial, radular, habitat, and shell structural characteristics. Interestingly, this species, a member of an otherwise widespread genus, had still not been discovered anywhere but the type locality in Franklin County, Tennessee, where Solem found it only between 750-800 feet elevation. The snail's habitat in Buck Creek Cove was estimated by Solem to be an area about 0.4 miles wide and 1.2 miles long (approximately 325 acres). Later studies found it was not quite as restricted in area and elevation as listed by Solem, but extended from 750 to 1,500 feet in elevation (USF&WS, 1982) and an area of approximately 1,950 acres along 9.8 miles of the Cumberland Plateau escarpment in Crow Creek Valley (USF&WS, 2006). Solem estimated the snail's population at 2,000 individuals, but later studies indicate it may be 10 times that amount (USF&WS, 1982). The U.S. Fish and Wildlife Service listed the species as endangered in 1978. Numerous searches, as late as 2004, confirmed that this small (17-21mm wide, 10mm high), intricately-patterned snail with the long name was endemic to Franklin County (Withers, 2003 & 2004).

A. picta has a fairly flat (slightly dome shaped) shell that is beige with dark spots on the ventrum and narrow dark flame-like markings on the dorsum. Juveniles are more brightly colored with an almost orange background color. The snails are found on limestone ledges or within crevices, in areas of mature tall-growth forest. Their primary food source seems to be lichens for which the snails forage both day and night (Freedman, 2002 & USF&WS, 1982). This snail is not rare within the type locality, but because it is limited to this one small area and thus extremely vulnerable to habitat disruption or destruction (e.g. lumbering, forest fire, quarrying), it was accorded protected status. The U.S. Fish and Wildlife Service published an approved recovery plan in 1982 (USF&WS, 1982) that was reviewed in 1991 and 2006, both reviews finding the original recovery plan inadequate and the snail population stable but endangered by pressure to quarry the area for limestone, timber harvest, and residential development (USF&WS, 2006). The state of Tennessee boasts over 225 land snail taxa, 100 aquatic snail taxa, and 120 freshwater mussel taxa, and is well aware of the need to monitor and protect this small snail (Withers, 2009).

Anguispira picta is found in museum collections, but probably few private ones. The shells illustrated here were collected legally by Doug Shelton during a project funded by the State of Tennessee and the U.S. Fish & Wildlife Service (Shelton, pers. comm, 2010). Doug served as an agent of the State of Tennessee during the project. The shells were all dead taken and serve as voucher specimens for distribution to museums. Slowly encroaching development or one raging forest fire could spell extinction for this small snail.

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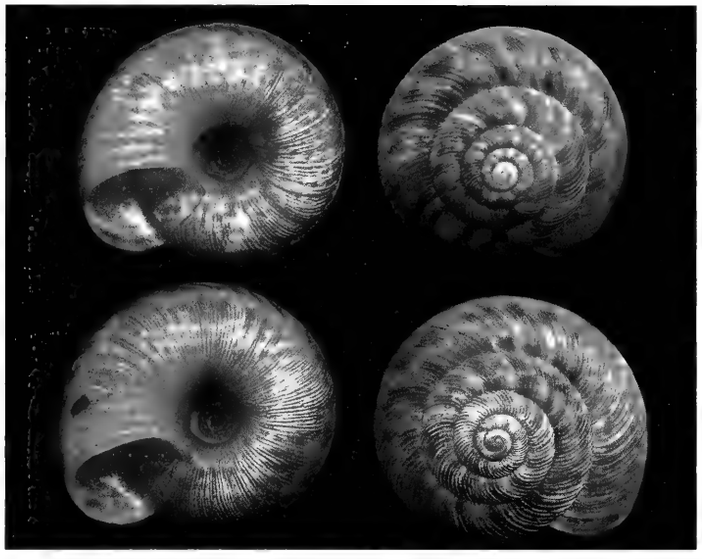
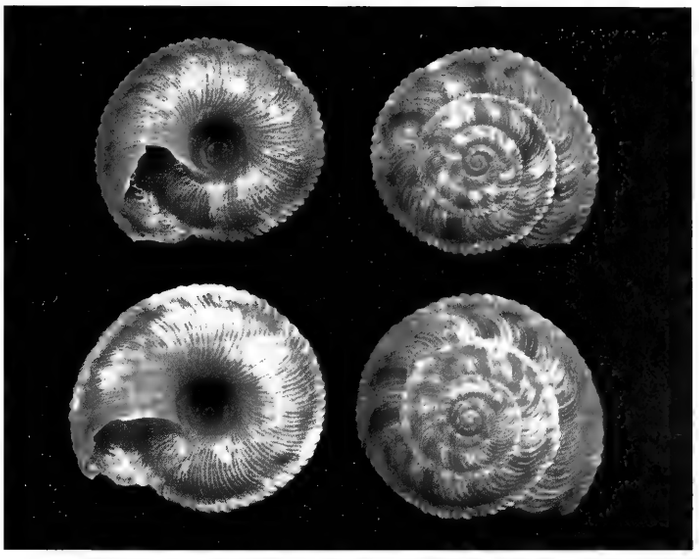
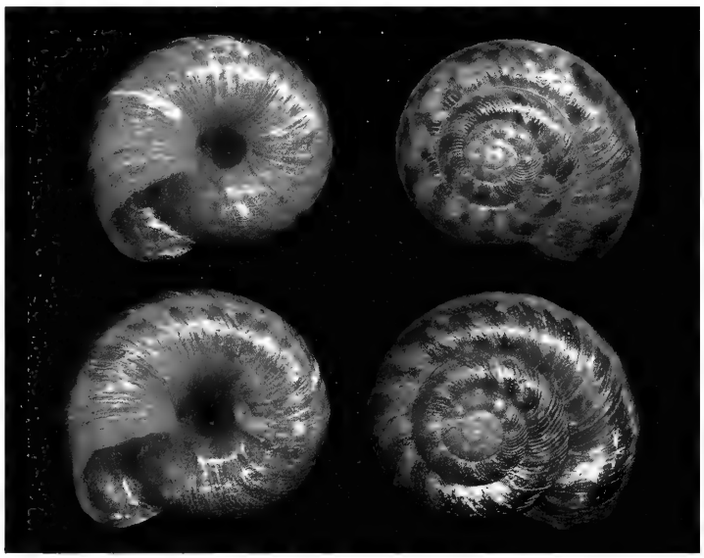


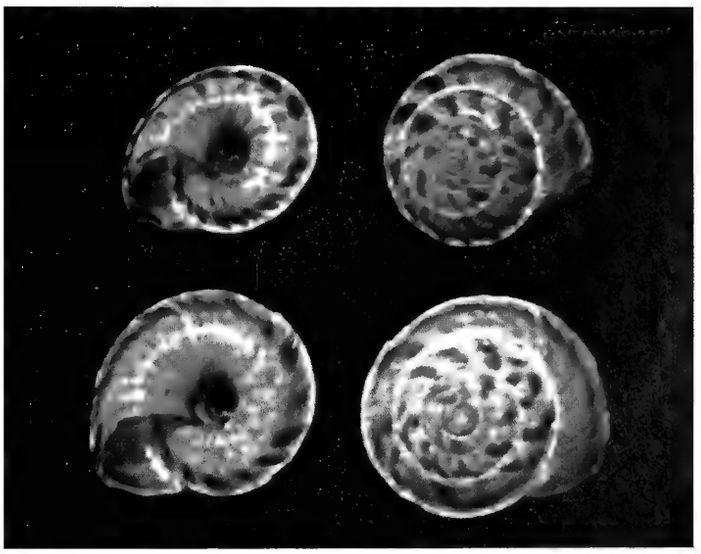
A. alternata (Say, 1816), 16-17mm, New York.



A. cumberlandiana (Lea, 1840), 15-16mm, Tennessee.



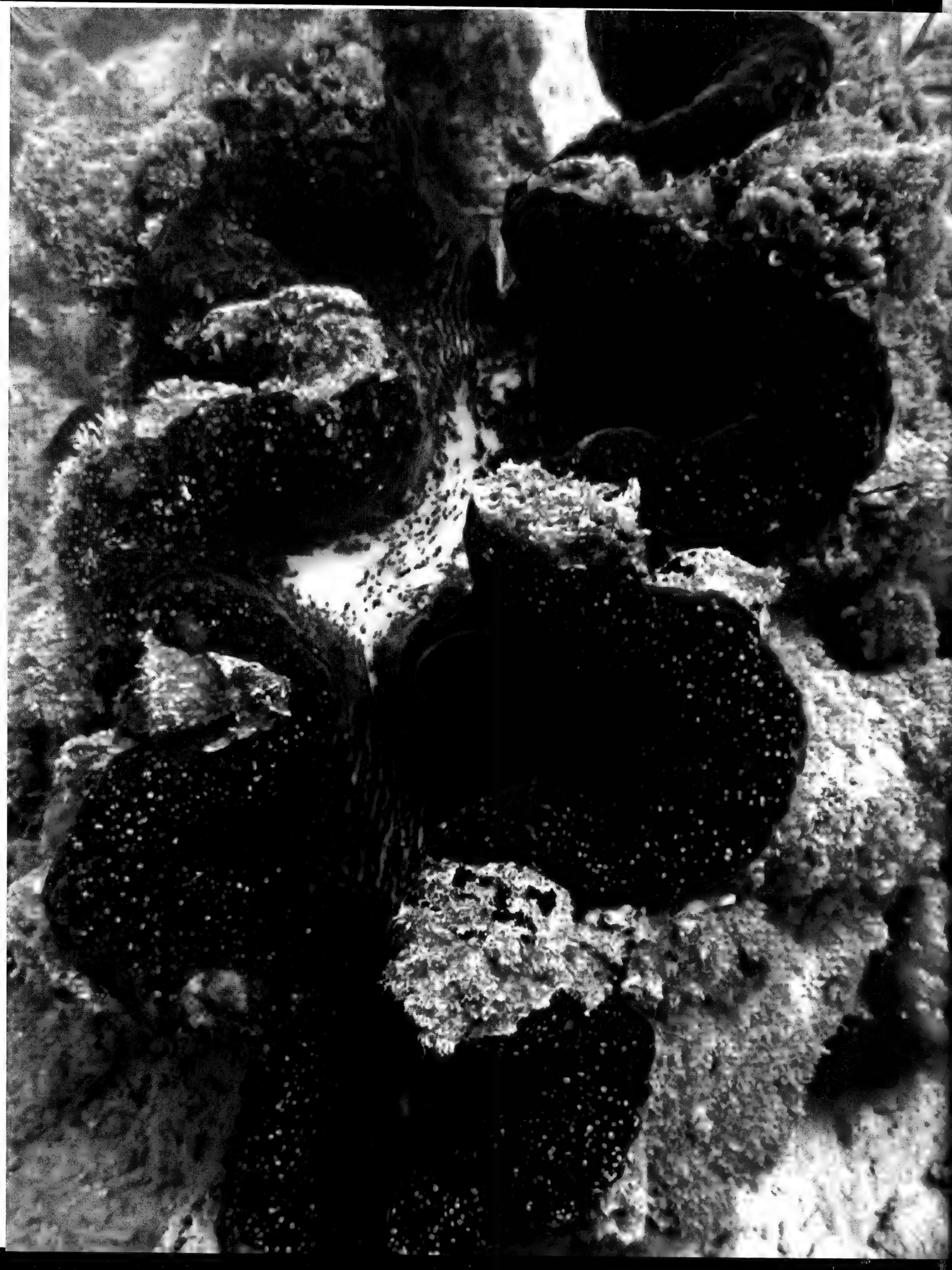
A. fergusoni (Bland, 1861), 15mm, Maryland.



A. picta (Clapp, 1920), 15-16mm, Tennessee (AMRC photo).

A. alabama (Clapp, 1920), 17mm, aestivating on limestone (AMRC photo).

Discus patula (Deshayes, 1830), 8-9mm, Indiana (note the small size).



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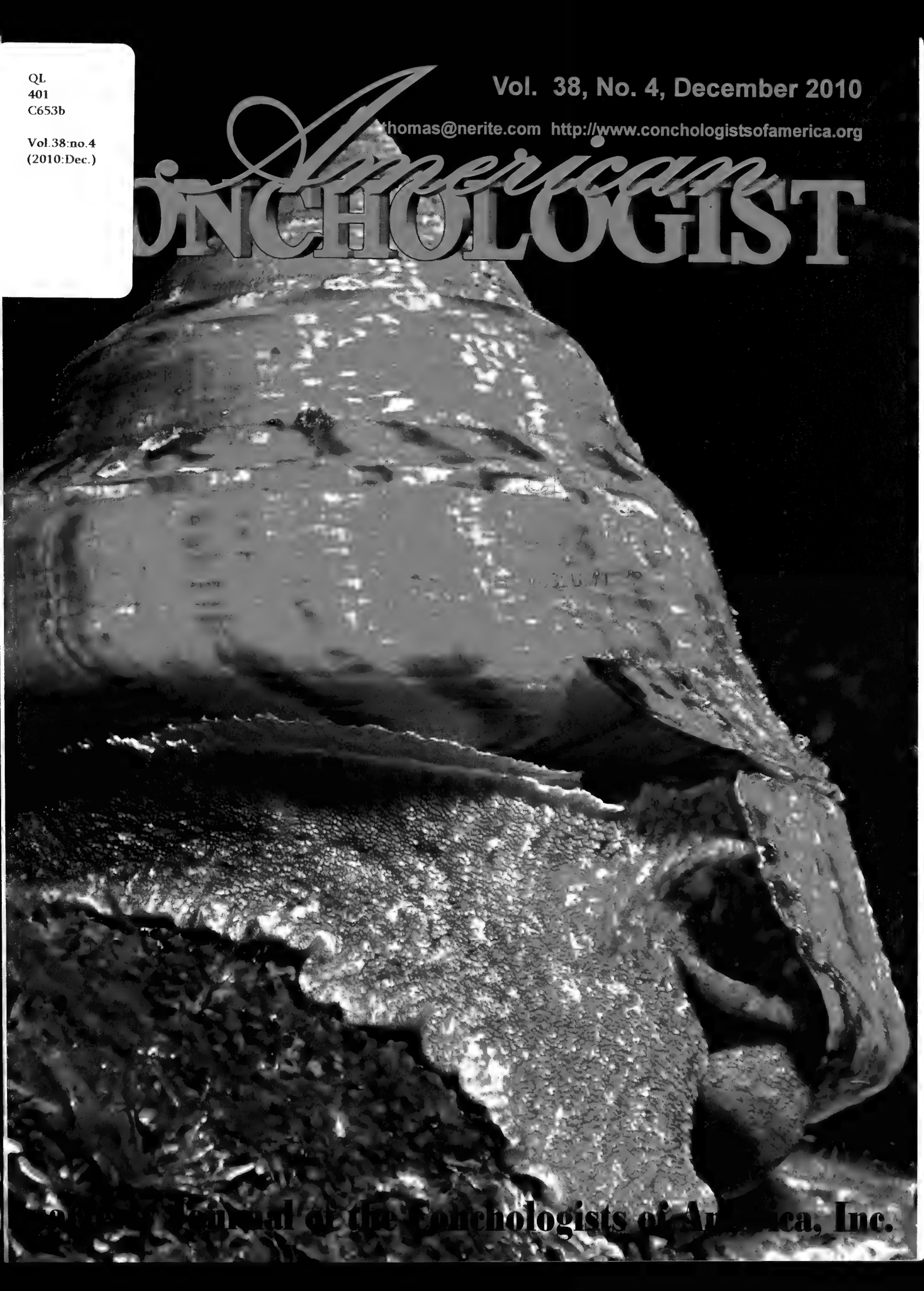

...Journal of the Conchologists of America, Inc.

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In This Issue

Editor's comments: First, I have to correct a couple of errors.

In the last issue of *American Conchologist*, vol. 38, no. 3, Sep 2010, I both misspelled and misspoke in the review of "The Sound of a Wild Snail Eating." The author, Elizabeth Tova Bailey spells her first name with a "z" rather than the "s" I used. She is also not actually recovered from her mystery illness, but rather still coping with chronic illness and its many complications to life. *Mea culpa*.

This next error is thankfully someone else's. Winston Barney wrote to inform me that the assignment of the stromb genera *Dolomena* and *Doxander* to Iredale was in error (*American Conchologist*, vol. 38, no. 3, Sep 2010). Winston states that according to Kronenberg & Dharma (2005, see ref. for article), "Iredale only gave names and no descriptions for *Dolomena* and *Doxander*, leaving both *nomen nudum*. The authors could find no earlier reference to these genera prior to Wenz (1940), thus making him the author of record: *Dolomena* Wenz, 1840 and *Doxander* Wenz, 1840."

I was pleased to note the First International Cone Meeting in Stuttgart, Germany, in October. According to my sources there were several interesting papers presented and lots of discussion centered on the family Conidae. This first meeting falls on the heels of the online publication of *The Cone Collector*, now in its fourth year. This cone-centered Internet publication has been sponsored by the Poppes and can be downloaded for free from their web site at: http://www.conchology.be

This issue is rather eclectic as usual, with hopefully at least one article for everybody.

Tom Eichhorst

Front cover: A superb and richly patterned specimen of *Entemnotrochus adansoniana* (Crosse & Fischer, 1861). Photograph by Charles Rawlings, off Roatan, Honduras, in 55 feet of water, after bringing the specimen up from 428 feet. The change in depth did not seem to affect the slit shell as its behavior continued as it had been at the deeper depth.

Back cover: A 14 inch *Triplofusus gigantea* (Kiener, 1840) (horse conch), attacking a much smaller *Busycon sinistrum* Hollister, 1958 (lightning whelk). This tableau took place in 10 inches of water and was spotted and photographed by David and Sandra Herman off Sanibel Island, FL, 5 November 2010.

Ifremeria nautilei Bouchet & Warén, 1991

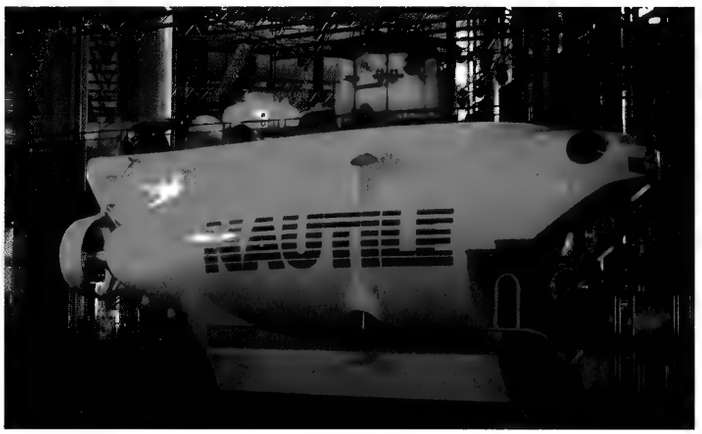
by Tom Eichhorst

I recently received an image of a deep water shell from Simon Aiken of Simon's Specimen Shells Ltd., in the United Kingdom (http://www.simons-specimen-shells.com). Simon has long supported *American Conchologist* with images and articles, and this time he had a shell he thought was special enough to be of interest to our readers. Well, he was certainly correct. The shell is *Ifremeria nautilei* Bouchet & Warén, 1991. The specimen was brought up from 6,600 feet in the Mariana Trough by the *DSV Nautile*. A couple of interesting side notes are that the *Nautile* is owned and operated by Ifremer (Institut français de recherche pour l'exploitation de la mer [the French Research Institute for Exploration of the Sea]), thus the genus name. This submersible was commissioned in 1984 and is capable of diving to depths (and more importantly, returning from depths) as deep as 6km or 3.7 miles. The *Nautile* has a rich history of scientific dives, but there are two missions for which it is perhaps best known: the examination and photography of the wreck of the *RMS Titanic* and the search in the Atlantic for the flight data recorder and cockpit voice recorder after the crash of Air France Flight 447 on 1 June 2009. Of concern here is the exploration the *Nautile* made of the Mariana Trough that provided this interesting specimen.

The Mariana Trough lies south of Japan in the western Pacific Ocean, just west of the larger and deeper Marianas Trench, a gash in the sea floor over 1,500 miles long but with an average width of only 43 miles and depths of over 10,800 meters or 6.75 miles. To the west of this is the Marina Trough, an active volcanic area resulting from the collision of two tectonic plates that form the deeper Marianas Trench. The older and heavier Pacific Plate is subducted or forced under the Mariana Plate creating the deep Marianas Trench with two resultant ridges to the west: the Mariana Arc containing the Marianas Islands (including the island of Guam) and the ridge further west called the West Mariana Arc. In between these two ridges is an area about the size of California called the Mariana Trough. The trough varies between 2800 and 5400 meters depth (9,186 to 17,700 feet). The volcanic activity in this area provides the suitable habitat for *Ifremeria nautilei.*

Ifremeria nautilei (first identified from the Lau and North Fiji Basins) is a hydrothermal vent dweller with endosymbiotic bacteria that allow it to exist and even thrive in the cold, dark, oxygen-starved depths. These gastropods inhabit the sea floor in areas of hydrothermal emissions that raise temperatures to a range of from 3°C to 20°C (37°F to 68°F). With temperature taken care of, two types of endosymbiotic bacteria provide their host with oxygen from the surrounding water and food from the sulfur emissions.

Ifremeria nautilei is the only species in the genus *Ifremeria* and has been placed in the family Provannidae with four other genera, all inhabitants of hydrothermal vents, cold seeps, whale falls, or sunken driftwood. *Ifremeria nautilei* has a unique larval form only recently discovered. For the first 15 days or so after hatching (they are brooded in a special camber in the female's pallial cavity, a part of the mantle) the larva are not the typical veligers we associate with most gastropods. Instead they are covered with cilia, longer on the posterior end, and develop two anterior globular structures. This larval form is called Warén's larva. After about 15 days the larva undergoes a metamorphosis into a typical gastropod veliger.



Above: *DSV Nautile*, owned and operated by Ifremer, the French Research Institute for Exploration of the Sea. Photo by Bjørn Som Tegner on Wikipedia, used IAW site instructions. Below: Living specimens of Ifremeria nautilei clustered on the sea floor with associated limpets (Olgasolaris sp.). Photo by P. Briand, from Wikipedia, used IAW site instructions.

Thanks to Simon we can present this image of a shell that few collectors would otherwise see, much less possess. *Olgaconcha tufari* L.A. Beck, 1991 is a junior synonym.

Resources:

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Ifremeria nautilei Bouchet & Warén, 1991 (54.5mm), taken at 6600 feet, Mariana Back-Arc Basin, by *DSV Nautile* (Schaake collection). Image by Simon's Specimen Shells Ltd., http://www.simons-specimen-shells.com

Gettleman key to probe of major reversals

by Harry G. Lee

1. The strange case of *Cerion fraternum* Pilsbry, 1902 (Eupulmonata: Urocoptoidea) on Cat Island, Bahamas

By his own admission, former COA President Alan Gettleman of Merritt Island, FL, is relatively new to saturation landsnailing. A self-admitted "musselhead" for years, he was greatly influenced by the late Hessie Kemper during his St. Louis days. On the other hand, Hessie's sister, the late Frieda Schilling, was a landsnailer, and Alan was thus exposed to that side of conchology early on (Gettleman, 2010). Yet only in the last few years, particularly since his retirement from NASA two years ago, has he reprised his interest in terrestrial snails. Despite the relative novelty of the enterprise, he has embraced this aspect of shelling with a passion reminiscent of Frieda's. Several field trips, each lasting a week or more, have taken him to Jamaica, Alabama, the Smokies and Blue Ridge, back to St. Louis, and recently to Mayaguana, Chub Cay, and Cat Island in the Bahamas. On those latter three trips he was exposed to the great panoply of peanut snails, genus *Cerion*, which find their metropolis in this island group, where they are both speciose and exhibit high rates of endemnicity. He pled guilty to a new addiction as he began to look closely at taxonomy and other aspects of *Cerion* biology.

While on Cat Island with the Bailey Matthews Shell Museum field contingent this April, Alan spent the better part of a week gathering *Cerion* from a variety of accessible (some barely) habitats. One lesson learned by most *Cerion* collectors is that large series of specimens are essential to the appreciation of shell variation within and among the generally small and isolated colonies of these snails. With that in mind, Alan retrieved a couple of hundred empty specimens of what appeared to be a populous but recently-extirpated colony of *Cerion fraternum* Pilsbry, 1902 near the SE end of the island. This is one of the smallest species in the hundreds named in the genus, being about 1/2 inch at maturity. The other Cat Island species, numbering a half-dozen or more, average about twice that in height.

Several days after his return home, Alan was curating his many Cat Island shells and *mirabile dictu*, came across a reverse-coiled (sinistral) specimen in this large lot of empty shells. The specimen was subadult - the lip not thickened and reflected, but it sure was left-handed (**Fig. 1,** Bill Frank digital image). One of his early responses was to report this bit of news to me. Alan no doubt recalled that at this very station I had made it clear that I was selectively searching for sinistral specimens in this colony for about a half hour, estimating well over a thousand dextral-only specimens caught my eye. Meanwhile, neither Alan nor Anne Joffe (who took the photo of Alan in full field regalia (**Fig. 2**), the remainder of our collecting triad, were so disposed. Bitter irony aside, I am compelled to offer an insight into the singularity of this Gettleman *coup-de-grace*. First, a little history is in order:

Perhaps by sheer coincidence, the first sinistral *Cerion* specimen ever brought to light was also found on Cat Island, Bahamas (Plate, 1907) and reported as *C. fordi* [= *C. agassizii* (Dall, 1894) *fide* Gould, Young, and Kasson, 1985]. The collector, German biologist Ludwig Hermann Plate (1862-1937),

Fig. 1 Rare sinistral (R) and normal dextral (L) specimens of *Cerion fraternum* Pilsbry, 1902, collected by Alan Gettleman on Cat Island. The adult shell is less than 1/2 inch in length.

is memorialized by *Cerion platei* Clench, 1933 (**Fig. 3,** from Harasewych, 2006, with the author's permission), recognized as a Cat Island endemic. Alan and others collected both these species earlier on this trip.

Charles Johnson Maynard (1845-1929) (**Fig 4**), the most prodigious student of *Cerion* in the history of conchology (Harasewych *et al.*, 2007), found three sinistral specimens (Maynard, 1920: 81). Two were from a single sample including about 1,962 dextral deme-mates and later named *C. santesoni* (Maynard and Clapp, 1929) [= *C. glans* (Küster, 1844) *fide* Gould, Young, and Kasson, 1985] from the northern shore of New Providence Island, Bahamas. Perhaps surprisingly, one of the sinistral shells was designated the lectotype (MCZ358073: Harasewych *et al.*, 2007). The fourth left-handed Peanut Snail was collected along with 583 dextral deme-mates on Bird Cay, Exuma Islands, Bahamas. It became the lectotype (MCZ356677:

Fig. 2 Alan Gettleman decked out in the latest sheller's fashion.

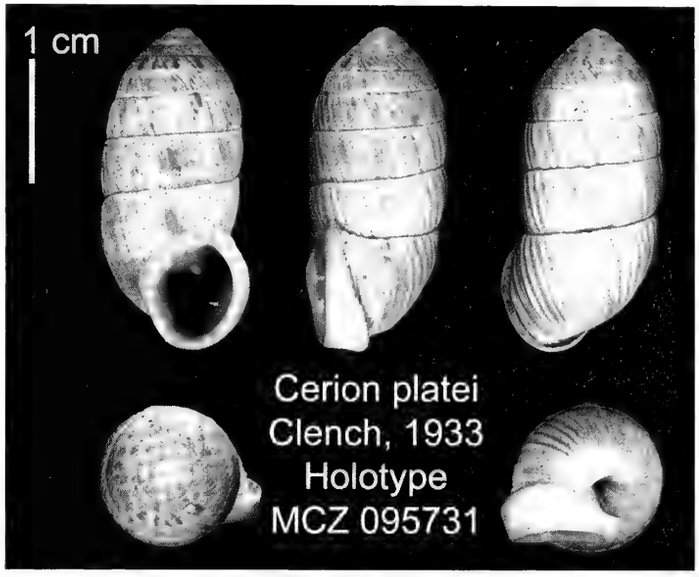

Fig. 3 *Cerion platei* Clench, 1933, endemic to Cat Island.

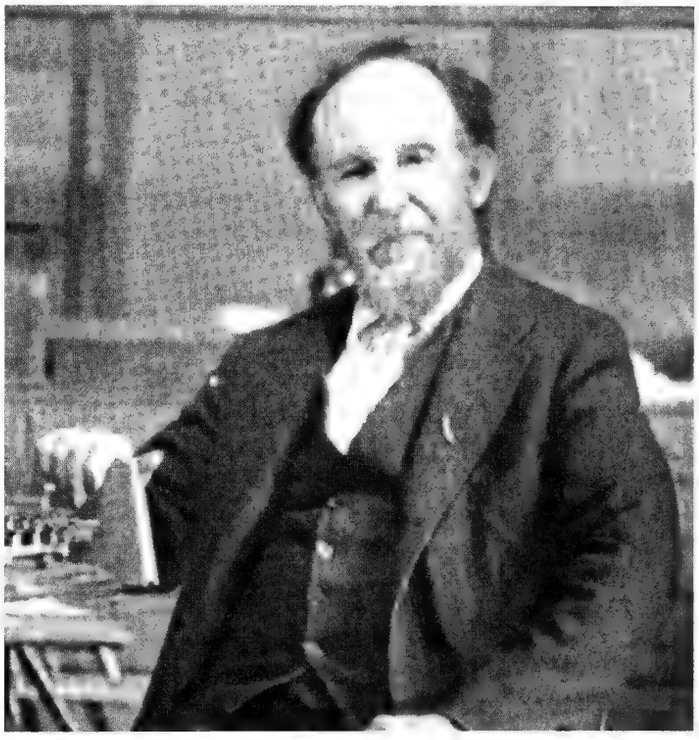

Fig. 4 Charles Johnson Maynard (1845-1929), an ornithologist and a dedicated student of *Cerion*.

Harasewych *et al.*, 2007) of *C. inconstans* (Maynard, 1920) [also = *C. glans* (Küster, 1844) *fide* Gould, Young, and Kasson, 1985]. Over a half-century elapsed before Bill Kasson located a fifth specimen, previously unrecognized, in a lot of *C. incanum* (A. Binney, 1851) collected on Big Pine Key, Monroe Co., Florida, at the OSUM (abbreviations of institutional repositories listed on page 10). Not much later Stephen Jay Gould found a second sinistral *C. incanum*, also from Big Pine Key and likewise unrecognized, in the MCZ. These latter five specimens and some of their dextral deme-mates formed the basis of an extensive morphometric analysis by Gould, Young, and Kasson (1985).

Operating far from the metropolis of the family, and quite unaware that he was dethroning Grand Master Maynard, Phil Poland of Tampa, FL, found five more sinistral *C. incanum* in the Lower Florida Keys, four of them from a single population on Boca Chica Key over a few visits spanning about a year (Poland, 2000). (**Fig. 5**) is an example from Phil's camera.

After over a century of field and museum work on *Cerion* by many scientists and other enthusiasts with probably a million or more shells examined, Alan can bask in the glory of knowing he's only the sixth collector to bag a sinistral *Cerion* - and apparently only the fourth to know that he had actually done so! His left-handed *C. fraternum*, while being the twelfth sinistral cerionid shell ever reported, is the sole representative of only the fourth species of this family to be known in the sinistral condition. In summary:

Cerion agassizii (Dall, 1894) L. Plate! **1**
Cerion fraternum Pilsbry, 1902 A. Gettleman! **1**
Cerion glans (Küster, 1844) C.J. Maynard! **3**
Cerion incanum (A. Binney, 1851) Anon! 2; P. Poland! 5 = **7**

Total: 4 species, **12 specimens.** Four collectors accounting for 10 specimens.

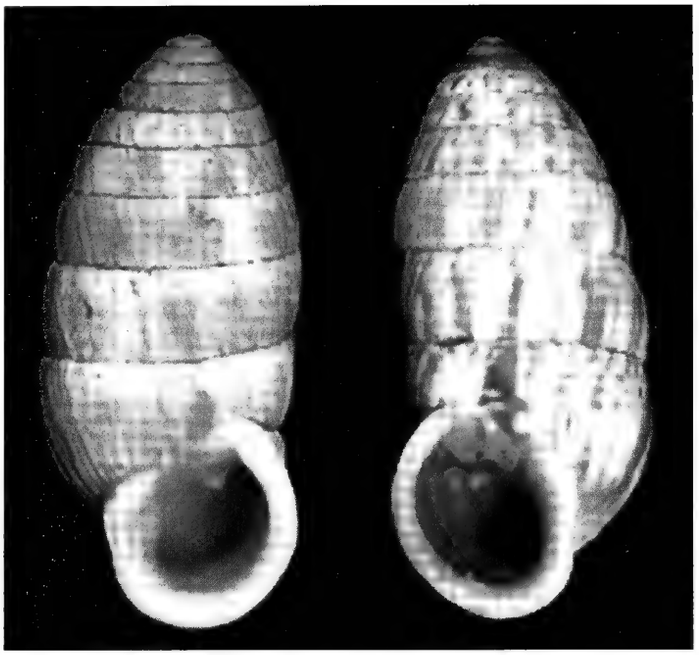

Fig. 5 *Cerion incanum* (A. Binney, 1851), 25mm. Collected by Phil Poland in the Florida Keys, dextral (L) and sinistral (R).

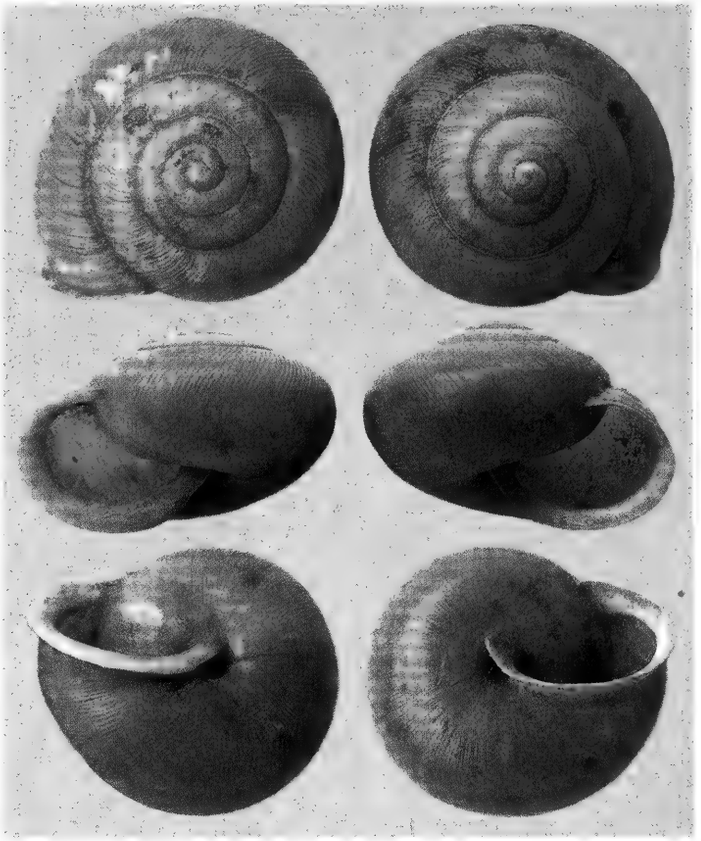

Fig. 6 *Mesodon clausus* (Say, 1821), 16mm. The shell on the left is the only known sinistral adult specimen of this species.

2. One thing leads to another. A new twist in the Polygyridae (Eupulmonata: Polygyroidea)

The Gettleman Collection isn't small, unidimensional, or limited to self-collected material. There are plenty of pre-owned (recycled) specimens. Among these are a number of land snails obtained from dealers and other collectors. It was from the latter resource, although an as yet untraced chain of ownership, that Alan acquired a number of specimens originating in the Aron L. Mehring collection. Mehring, a resident of Adelphi and of Hyattsville, MD, and a fertilizer scientist by profession, produced a typescript manuscript monograph on the land snails of Jamaica, based in part on his collections there (R. Goldberg, pers. comm.. 27 June, 2010). He also collected freshwater and marine shells, as well as echinoderms, in Cuba, Pacific Panama, Hawaii, the Philippines, Japan, and Florida, from (at least) 1947- 1964 (NMNH, 2010). For Fiscal Year 1963-1964, a portion, about 3,500 lots and 23,800 specimens, of his collection was the largest given to the NMNH Division of Mollusks (Rehder ms: 150 *teste* M.G. Harasewych, 29 June, 2010).

As is often the case with us collectors, Alan took only momentary notice of most of these Mehring specimens initially. He was, however, given momentary pause by a left-handed shell in the material, a single specimen lot from Houston collected by Mehring himself. Now, this was several years before Alan's terrestrial epiphany, and he relates that he was quite content to regard this as a "normal" sinistral specimen. No doubt energized by his *Cerion* discovery, Alan recently dug this specimen of "*Mesodon bucculentus* Gould" out, reported it to me, and ultimately lent it for close examination and photography. The shell actually belongs to the closely-related *M. clausus* (Say, 1821), and is the only known

Fig. 7 Leslie Hubricht (1908-2005), a friend and probably the preeminent collector of eastern US landsnails.

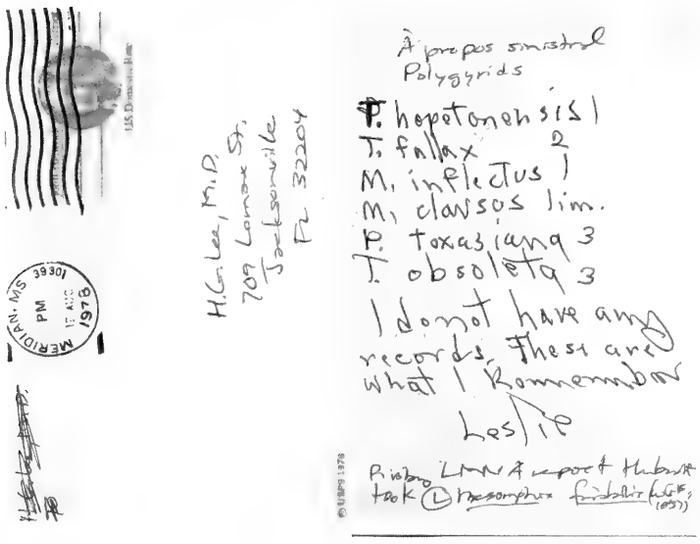

Fig. 8 The August 1978 postcard from Leslie Hubricht listing sinistral Polygyridae.

sinistral adult specimen of this species in existence! (**Fig. 6,** Bill Frank digital image)

As with the *Cerion*, there is one undisputed champion collector of eastern US landsnails, Leslie Hubricht (1908-2005) (**Fig. 7**, with the permission of Jochen Gerber). I had the privilege of working with Leslie in the field on a few occasions and maintaining a correspondence for more than two decades. As it suited both of our styles, our messages were usually short, and in those pre-Internet days (1970's to 1990's) postcards were quite suitable for streamlined communication. As I have been interested in gastropod coiling reversal for a very long time, on one occasion I mailed him a self-addressed stamped postcard requesting him to summarize his experience with sinistral Polygyridae, the family including Alan's *Mesodon*. **Fig. 8** is the August 13, 1978 response. Although Leslie probably handled something on the order of a few hundred thousand polygyrids, he had found only eleven specimens of five species! Interestingly an immature *Mesodon clausus* was one of the eleven! Over the years I have gathered notes on other sinistral polygyrids, and on the occasion of Alan's second sinistral score, I thought it might provide context for this kind of rare discovery. Here follows an account, in roughly the same format as the above *Cerion* tabulation, of all the known instances of sinistral specimens of polygyrids in the USA and northern Mexico (brackets [] include reference and collection details, ! indicates collector:

***Allogona profunda* (Say, 1821)** [Pilsbry, 1940: 879: "Shimek and Billups have recorded 4" (no reference)] **(4)**

***Daedalochila avara* (Say, 1818)** [4132 Ortega Forest Dr., Jacksonville, FL, H.G. Lee! 27 July, 1977; Lee Collection] (**Fig. 9**) **(1)**

***Euchemotrema leai* (A. Binney, 1841)** [Archer, 1934: 148: Ann Arbor, MI, Alan F. Archer! 1932-1933] **(1)**

***Inflectarius inflectus* (Say, 1821)** [Bland, 1861: 448: John Gould Anthony Collection, ?MCZ; Pilsbry, 1940: 773: Hubricht! St. Louis, MO; FMNH; Feinberg, 1970: 12-13: Carter Co., TN, Harold S. Feinberg! 4 June, 1969, AMNH 157293] **(3)**

***Linisca texasiana* (Moricand, 1833)** [Hubricht, 1978: three, FMNH] **(3)**

***Mesodon clausus* (Say, 1821)** [Hubricht, 1978: immature; FMNH; Houston, TX, A.L. Mehring! 13 December, 1960. Gettleman Collection] **(2)**

***Mesodon elevatus* (Say, 1821)** [Tryon 1867: 104: Frank Daulte Collection, Cincinnatti] **(1)**

***Mesodon mitchellianus* (I. Lea, 1839)** [Bland, 1861: 448: Thomas Bland Collection, ?AMNH but not in Gratacap (1901); Wetherby, 1895: 94: near Cincinnati, OH, F.W. Bryant!] **(2?)**

***Mesodon thyroidus* (Say, 1817)** [Bland, 1861: 448: Bland Collection, ?AMNH but not in Gratacap (1901); Wetherby, 1895: 94: three shells: one Cincinnati, OH, Stannage! two Wetherby! one deposited at MCZ; Archer, 1934: 148-149: two specimens, Ann Arbor, MI, A.F. Archer! April, May, 1933; Petit, R.E., March 2007, personal communication, G. R. Webb letter to P. H. Reed late Sept. or early Oct., 1946, prob. FMNH] **(8?)**

***Mesodon zaletus* (A. Binney, 1837)** [Pilsbry, 1940: 725: two specimens: one Herkimer Co, NY, one ANSP; Fluck, 1943: 105: two of several hundred individuals, Ilion, Herkimer Co., NY, W.H. Fluck!] N.B. Ilion colony introduced by J. Lewis (*fide* A. Bailey, Pilsbry, 1940: 724-725), therefore derived from dextral stock. **(3-4?)**

***Millerelix mooreana* (W. G. Binney, 1857)** [Pilsbry, 1940: 624: J.A. Singley!] **(1)**

***Neohelix albolabris* (Say, 1817)** [Lewis, 1872: 99: near Mohawk, NY, James Lewis! June, 1871; Pilsbry, 1940: 838: several known; Reigle, 1962: 37; Washtenaw Co., MI, Phil Marsh(?)!; UMMZ 210163] **(prob. >6)**

***Patera roemeri* (L. Pfeiffer, 1848)** [Pratt, 1965: Possum Kingdom SP., Palo Pinto Co., TX, W(illiam) Lloyd Pratt! (?)1965, Pratt Collection no. 992] **(1)**

***Polygyra cereolus* (Mühlfeld, 1818)** [Baily, 1942: 102: Hillsboro, FL, R.I. Baily! Spring 1940; Sullivan, 1986: Desoto Park, Manatee Co., FL, Wayne Sullivan! 1986] (**Fig. 10**) **(2)**

***Polygyra septemvolva* Say, 1818** [W.G. Binney, 1878: 282 MCZ; Waccasassa River, SR 24 bridge, Levy Co., Florida, John Slapcinsky! 19 March, 2005, Lee Collection] (**Fig. 11**) **(2)**

***Praticolella* species** [23 km NNW El Limon, Tamaulipas, Mexico, Fred G. Thompson! 27 December, 1989, Lee Collection] (**Fig. 12**) **(1)**

***Stenotrema hirsuta* (Say, 1817)** [Bland, 1961: 448: Isaac Lea Collection, ?USNM] **(1)**

***Triodopsis fallax* (Say, 1825)** [Bland, 1861: 448: William Greene Binney Collection, ?AMNH but not in Gratacap (1901); Hubricht, 1978: two, FMNH] **(3)**

***Triodopsis hopetonensis* (Shuttleworth, 1852)** [Pilsbry, 1940: 812: ANSP; Hubricht, 1978, FMNH] **(2)**

***Triodopsis obsoleta* (Pilsbry, 1894)** [Hubricht, 1978: three, FMNH] **(3)**

***Triodopsis vulgata* Pilsbry, 1940** [Reigle, 1962: 36-37: Washtenaw Co., MI, Phil Marsh(?)!, UMMZ 210162] **(1)**

***Webbhelix multilineatus* (Say, 1821)** [Wetherby, 1895: 94: A.G. Wetherby! MCZ] **(1)**

***Xolotrema fosteri* (F. C. Baker, 1932)** [Pilsbry, 1940: 831: W.G. Binney! 202 Union St., Burlington, NJ (his own garden), ?AMNH, but not in Gratacap (1901); St. Louis, MO, Frieda Schilling! 2 May, 1969, Lee Collection] N.B. NJ specimen definitely derived from (naturalized) dextral stock. (**Fig. 13**) **(2)**

Total: 15 genera, 23 species, about **(53) specimens.** Twenty collectors; **36 specimens**:
Archer, A.F **3**
Baily, R.I. **1**
Binney, W.G. **1**
Bryant, F.W. **1**
Feinberg, H.S. **1**
Fluck, W.H. **2**
Hubricht, L. **11**
Lee, H.G. **1**
Lewis, J. **1**
Marsh, P. (?) **2**
Mehring, A.L. **1**
Pratt, W.L. **1**
Schilling, F. **1**
Singley, J.A. **1**
Slapcinsky, J. **1**
Stannage **1**
Sullivan, W. **1**
Thompson, F.G. **1**
Webb, G.R. **1**
Wetherby, A.G. **3**

Abbreviations for institutional repositories mentioned above:
AMNH: American Museum of Natural History, New York.
ANSP: Academy of Natural Sciences, Philadelphia.
FMNH: Field Museum of Natural History, Chicago.
MCZ: Museum of Comparative Zoology, Harvard University, Cambridge, MA.
OSUM: Ohio State University Museum, Columbus, OH.
UMMZ: University of Michigan Museum of Zoology, Ann Arbor.
NMNH: National Museum of Natural History, Smithsonian Institution, Washington DC.

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N.B. All the above citations in *The Nautilus* can be accessed on-line at <http://www.archive.org/search.php?query=Nautilus>.

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shells@hglee.com

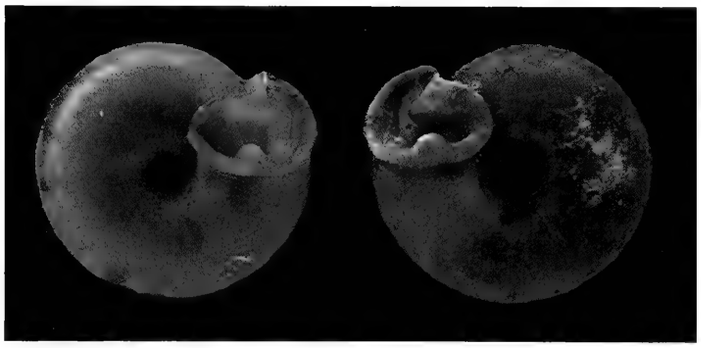


Fig. 9 Dextral (L) and sinistral (R) *Daedalochila avara* (Say, 1818), 6mm. Collected in Jacksonville, Florida, by Harry G. Lee, 27 July 1977, Lee collection.

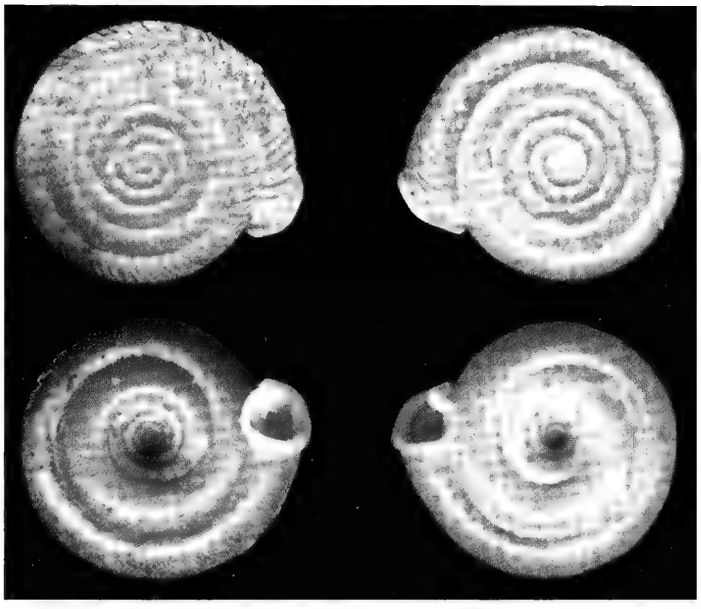
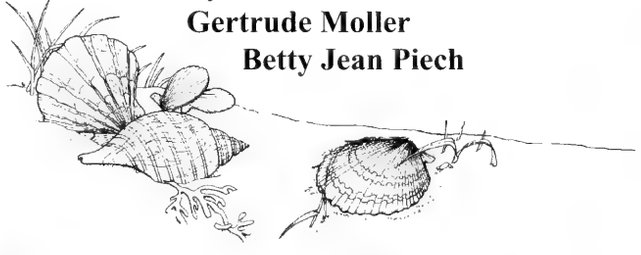


Fig. 11 Dextral (L) and sinistral (R) *Polygyra septemvolva* Say, 1818, 9mm. Collected along the Waccasassa River, Levy Co., Florida, by John Slapcinsky, 19 March 2005, Lee collection.

In Memoriam (see p. 20):

Cecelia White Abbott
Mary Flentz
Gertrude Moller
Betty Jean Piech



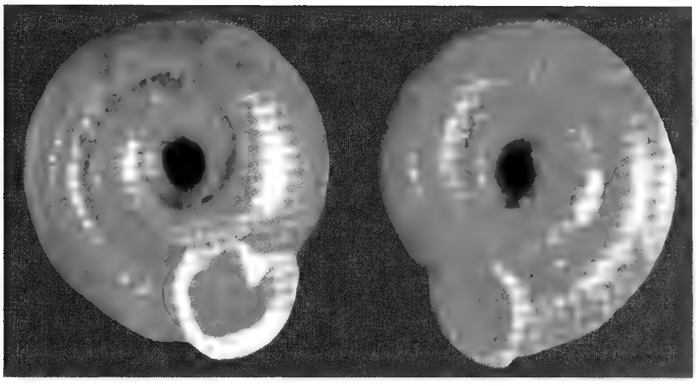


Fig. 10 Dextral (L) and sinistral (R) *Polygyra cereolus* (Mühlfeld, 1818), 8mm. Collected in Desoto Park, Manatee Co., Florida, by Wayne Sullivan in 1986, Sullivan collection.

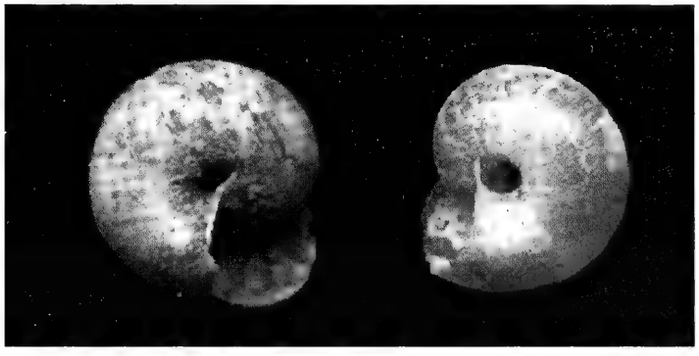


Fig. 12 Dextral (L) and sinistral (R) *Praticolella* species, 10mm. Collected north of El Limon, Tamaulipas, Mexico, by Fred G. Thompson, 27 December 1989, Lee collection.

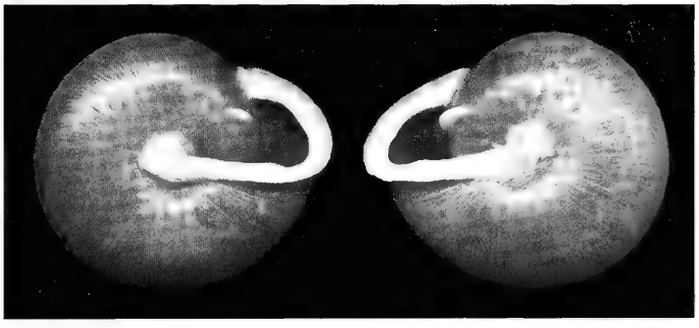


Fig. 13 Fig. 12 Dextral (L) and sinistral (R) *Xolotrema fosteri* (F.C. Baker, 1932), 17mm. Collected in St. Louis, Missouri, by Frieda Schilling, 2 May 1969. Lee collection.

Four Abnormal Land Shells from Israel

by Moshe Erlendur Okon

to Lilach

Shell collections rarely exhibit abnormal specimens and only a handful of collectors focus on them. Although there is much to learn from these aberrant forms, they are usually considered to be less attractive or aesthetic and thus discarded in the initial stages of the long process which brings specimens to dealers and then to our cabinets and display cases. In reality, less than perfect land and marine molluscs are much more common than is reflected in our collections.

The situation in the conchological literature is no different. In the past ten years, for example, only five articles relating to this subject appeared in *American Conchologist*. One dealt with a white color form, three with sinistral specimens, and only one with an actual freak (co-authored by me, incidentally).

Abnormal shells can be divided into two major groups: one of shells with repetitive patterns of abnormality, such as albino, melanistic, or rostrated appearances, and the other of shells with totally erratic growth patterns and deformities. The former group seems to attract more attention and interest and certain exemplars can also command high prices, such as the rare small pale *Harpa major* from Australia or the dark rostrated cowries of New Caledonia.

One can often find the general statement that most freaks are probably caused by early trauma to the shell or the animal, especially an injury to the mantle. Other reasons given are water pollution, parasites, renewed growth after maturity has been reached, and habitat changes. Nonetheless, I have not been successful in obtaining literature pertaining to the general phenomenon of abnormal growth (as opposed to descriptions of miscellaneous aberrant shells).

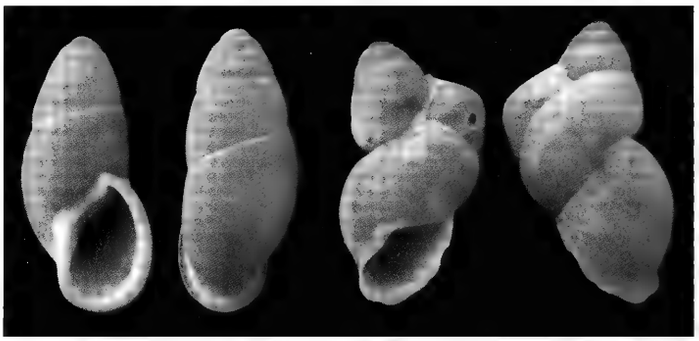
This short article depicts four landshell species from Israel, each displaying aberrant growth. Collecting for these is especially productive during the beginning of the rainy season, which is usually around October, and throughout the winter. The area of the State of Israel is not a simple geographical unit and its borders with Lebanon, Syria, Palestine, Jordan, and Egypt (some still to be decided) are somewhat arbitrary and not necessarily reflective of natural landscape boundaries. There are, however, land shells endemic to the wider area of Israel and some that live in much smaller habitats within Israel.

Those readers with an interest in land shells from the Holy Land are welcome to contact me for more information and exchanges.

Buliminus labrosus (Olivier, 1804)

This light brown shell, averaging 30mm, belongs to the family Buliminidae and is quite common throughout south Lebanon, north and central Israel and Palestine, and west Jordan. There are several subspecies or forms, varying mostly in size and shape. It lives in limestone crevices and can often be found in the middens of small rodents with the shell punctured in the last whorl. A means to a feast for the rodent.

The shell pictured here began its growth in a normal manner and at a certain point another juvenile *B. labrosus* attached itself to, what was at that time, the body whorl. This probably occurred during a rest stage between growing cycles. The attached shell can be seen on the top, its apex pointing down and with the last whorl punctured. The host continued growing, but as it could not remove its guest (which died but remained attached), it coiled around the attached shell until it reached maturity and formed its thickened outer lip. The guest juvenile is still attached to the host, although partly enclosed by the adult shell.



Buliminus labrosus **(Olivier, 1804) (normal specimen (L) and abnormal specimen (R) 27mm), found on limestone rocks near Kesalon, Israel (col. MEO).**

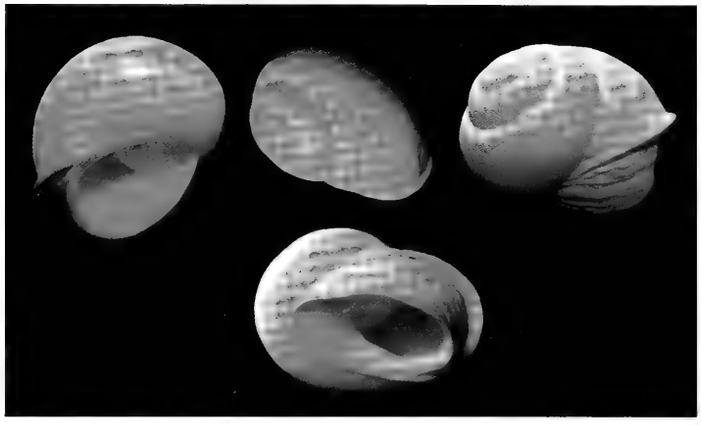
Sphincterochila fimbriata **(Bourguignat, 1852) (normal specimen (L) and abnormal specimen (R) 15mm), found on limestone rocks in the Judean Desert, Israel (col. MEO).**

Sphincterochila fimbriata (Bourguignat, 1852)

This white shell, in the family Sphincterochilidae, is common in the central Israel-Palestine-Jordan area. The shell reaches 20mm and can be more or less flattened compared to the imaged (normal) shell. In an article by Bar, scalarid or open-coiled forms of this species are described. Sinistral specimens are also known.

The smaller abnormal shell pictured here (15mm) is a scalarid loosely coiled shell and even though the whorls are not disjunct, it is certainly far from the typical form for this species. It seems to have died before it reached maturity, lacking the last whorl. To me, this is aesthetically the most attractive of the shells illustrated here.

A land shell with a similar scalarid form in the genus *Josephinella* is found in Greece and is pictured in an article by Cédric Audibert. Another example many of us are familiar with is the scalarid form *Cornu aspersa* (Müller, 1774) (syn. *Helix aspersa*) illustrated on page 193 of Abbott's "Compendium of Landsnails."

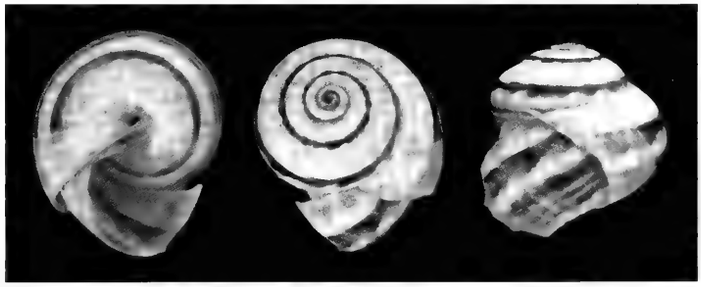


***Levantina spirplana werneri* (Kobelt, 1889) 40mm, found dead on limestone rocks near Bareqet, Israel (col. MEO).**

Levantina spirplana werneri (Kobelt, 1889)

This globose cream coloured shell, in the family Helicidae, may be a subspecies or form (authors disagree). It can reach up to 40mm, lives in a very restricted habitat, and is carinate or keeled as a juvenile. The umbilicus of this species is totally covered. The color pattern of the adult shell consists of five poorly defined and interrupted brown spiral bands. The outer lip is thickened and the aperture faces downward towards the ventrum of the shell.

The specimen pictured here reached adulthood in a normal manner (outer lip thickened and last whorl rounded, not carinated), but then, for some reason, resumed growth for another eighth of a whorl. While the inner part of the shell shows continuity in smoothness and texture, the outer part of the additional whorl is rougher and not confluent with the original outer lip The transitional angle is a bit sharper as well. The new outer lip is not completely thickened.



***Theba pisana* (Müller, 1774) 21mm, found on bushes in Sede Moshe, Israel (col. MEO).**

Theba pisana (Müller, 1774)

This rather handsome shell is another specimen in the Helicidae exhibiting a "double aperture." This species, originally from the Mediterranean area, has become widespread throughout many areas of the world. The shell is small to medium in size (15-22mm) and varies considerably in colour and in the pattern of the spiral lines. The tip of the apex, however, is dark brown or black, even on pure white specimens.

As I close this quick look at a few abnormal shells found in Israel, I should note that the "double aperture" phenomenon is a bit more regularly encountered and can occasionally also be seen in marine gastropods.

Abbott, R. Tucker. 1989. Compendium of Landsnails, American Malacologists Inc., Melbourne, pp. 240.

Audibert, Cédric. 2010. Varia: une *Josephinella* scalaire, *Folia Conchyliologica* no. 1., online at <http://cernuelle.com/download.php?lng=fr>.

Bar, Ze'ev. 1986. Scalaris Forms of *Sphincterochila* from Israel, *De Kreukel* 22 no. 4., online at < http://siris-libraries.si.edu/ipac20/ipac.jsp?uri=full=3100001~!368829!0>.

Heller, Joseph. 1993. Land Snails of the Land of Israel, Ministry of Defense, Tel Aviv, pp. 260 (Hebrew).

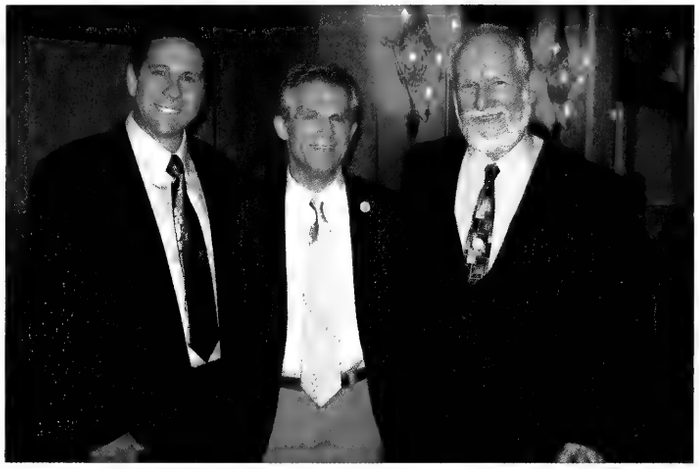
Mienis, Henk. 1993. A Sinistral Specimen of Both *Sphincterochila fimbriata* and *Sphincterochila prophetarum* from the Northern Negev Israel, *Bulletin de la Société Internationale de Conchyliologie* 15 (3).

Okon, Moshe Erlendur & Stratmann, Dirk. 2001. *Buccinum superangulare* Freak or Fact? *American Conchologist* vol. 29 no.3

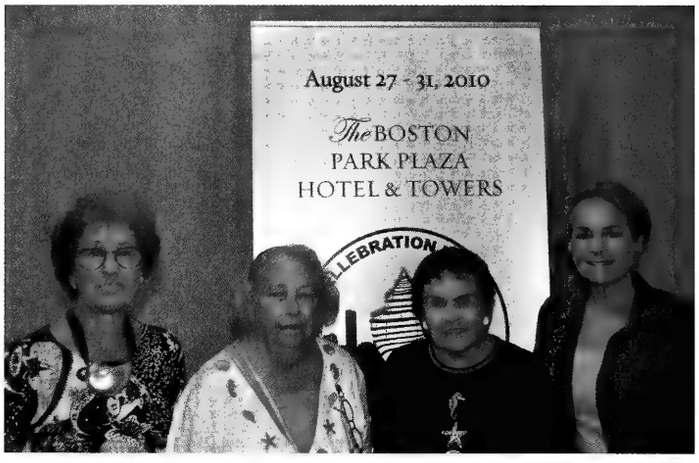
Petney, T.N. & Huset, H.C. 1992. A Specific and Distribution List of Landshells of Jordan *Argamon* No. 10: 1-14 April 1992.

Moshe Erlendur Okon
erlend@netvision.net.il P.O.Box 7803, Jerusalem, Israel

COA 2010 Convention



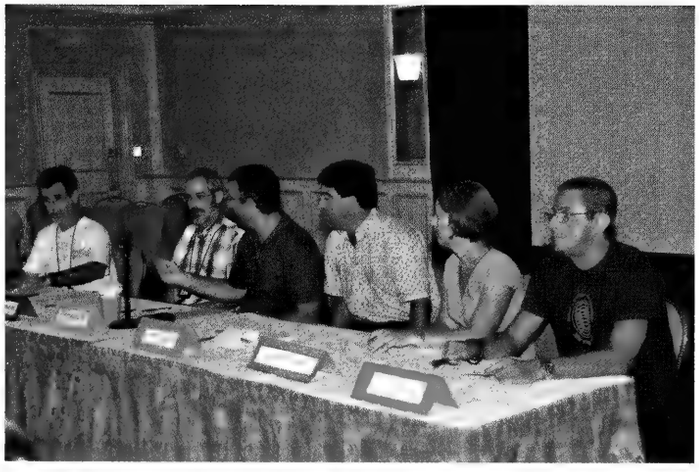
Tres Amigos - (left to right) Scott Robichaud, Warren Graff, & Don Robak. Like ducks, they were calm on top but paddled furiouly under water.



Part of the Texas Contingent - (left to right) Jean Dickman, Sybil Burger, Rozelle Wilson, & Cynthia Beck.

Half a table at the welcoming party - (left to right) José Leal, Harry Lee, Richard Ott, Marcus Huber & Anne Joffe.

The other half - (left to right) Anne Joffe (twice? COA Convention Coordinator, why not?), David Joffe, Jeanne Pisor, Don Pisor, & Chuck Owen.



Panel discussion on "What to do with your Collection" - (left to right) Rich Goldberg, Gary Rosenberg, Adam Baldinger, Jay Cordeiro, Elizabeth Shea, & José Leal.

Jim Brunner prepares to explain why at least two audience members need to bid against each other for these conchs.

Shellebration Boston

The bourse was held in the very elegant ballroom of the hotel. Here things have slowed during the dinner hour.

Shelling at low tide on Revere Beach. Practitioners of the "Sanibel Stoop" were in their element.

Enjoying the final banquet are (left to right) Jack Lightbourn, Jeanne & Don Pisor, & Cheryl & Rick Negus.

The intrepid folks who braved the beautiful sunny weather to walk Revere Beach looking for small washed up treasures.

From the opening rendition of "Charlie on the MTA" sung by Roger Pierce, to the interesting and varied daily programs, to the closing banquet, Shellebration Boston was a successful convention enjoyed by everyone who attended. The COA 2010 convention had 164 registrants, 24 dealers, and 78 banquet attendees. The verbal auction made $6,547, thanks to many generous donations and some really active bidding. The silent auctions were noted by many for the superb quality of material offered. The bourse venue was spectacular, with lots of room and an elegant setting. Apparently there were some Boston area attendees who had not attended previous COA conventions. The buying was "lively," ensuring a successful bourse for both dealers and attendees. With a lot of hard work by club members, the Boston Malacological Club was able to celebrate its 100th anniversary. The Boston Malacological Club wishes to thank their members and participants as well as Anne Joffe, Alice Monroe, Carolyn Petrikin, and Bob & Betty Lipe for making this event a success.

2011 SHELL SHOWS & RELATED EVENTS (Jan. – Jul.)

The following information is subject to change. Please verify with individual organization

Jan. 15-16 2011 **SPACE COAST SEASHELL FESTIVAL**, Melbourne, FL
The Melbourne Auditorium, 625 E. Hibiscus Blvd.
Jim & Bobbi Cordy, 385 Needle Blvd.
Merritt Is., FL 32953 (321) 452-5736
E-mail: corshell@earthlink.net

Jan. 22-23 2011 **BROWARD SHELL SHOW**, Pompano Beach, FL
Pompano Beach Recreation Center, NE 18th Av. & NE 6th St.
Nancy Galdo/Richard Sedlak, 4266 Chase Ave.
Miami Beach, FL 33140-3008 (305) 531-0036
E-mail: nancygaldo@gmail.com

Feb. 11-13 2011 **SARASOTA SHELL SHOW**, Palmetto, FL
Palmetto Convention & Civic Center, 1 Haben Blvd.
Sandy Pillow, 11017 Jasmine Circle
Bradenton, FL 34209 (941) 567-5982
E-mail: spillow6@comcast.net Cell: (810) 516-6120

Feb. 26-27 2011 **ST. PETERSBURG SEA SHELL SHOW**, Seminole, FL
Seminole Recreation Center, 9100 113th St. N., Seminole, FL
Bob & Betty Lipe, 348 Corey Avenue
St. Pete Beach, FL 33706 (727) 391-2197
E-mail: blipe@tampabay.rr.com FAX: 360-3668
Exhibit form at: http://www.stpeteshellclub.org

Mar. 3-5 2011 **SANIBEL SHELL SHOW**, Sanibel, FL
Sanibel Community Center, Periwinkle Way
Irene Longley, 2823 8th Ave.
St. James City , FL 33956-2133 (239) 283-7417
E-mail: milsfrills@cs.com

Mar. 5-6 2011 **XXIIéme RECONTRES INTERNATIONALES DU COQUILLAGE,** Paris, France
Bourse de Commerce, 2 rue des Viarmes, 75004 Paris, France
M. & D. Wantiez, 88, Rue du General Leclerc
95210 Saint Gratien, France 33 (1) 34-17-00-39
E-mail: wantiez.mada@wanadoo.fr

Mar. 10-12 2011 **MARCO ISLAND SHELL CLUB SHOW XXXI**, Marco Is., FL
Marco Presbyterian Church, Elkcam Circle
Linda Shockley, 348 Colonial Avenue
Marco Island, FL 34145 (239) 394-5416
E-mail: marco-sheller@earthlink.net

Apr. 30 2011 **BRITISH SHELL COLLECTOR'S CLUB CONVENTION,** Essex, England
Theydon Bois Community Centre, Essex
John Whicher, 44 196 336 3715
email: john@whicher.plus.com

May 14-15 2011 **XXI BELGIUM INTERNATIONAL SHELL SHOW**, Antwerp, Belgium
"Extra Time" Sports Hall, Louisalei 24, Hoboken
Charles Krijnen, Burgemeester Jansenstraat 10
NL-5037 NC Tilburg, Nederland 31 (13) 463 0607
E-mail: bvc.shellshow@planet.nl
Web site: www.bvc-gloriamaris.be/beurs_e.htm

Jul. 13-17 2011 **CONCHOLOGISTS OF AMERICA ANNUAL CONVENTION,** Cape Canaveral, FL
Radisson Resort at the Port, 870 Astronaut Boulevard
Bobbi Cordy - corshell@earthlink.net (321) 452-5736
Doris Underwood - dunderwood13@cfl.com (321) 622-4372
Web site: www.conchologistsofamerica.org

Jul. 2-3 2011 **TOWNSVILLE SHELL SHOW**, Townsville, Queensland, Australia
Orchid Society Hall, Charles Street, Kirwan
Glenda Rowse, 19 Farrell Street
Kirwan 4814, Queensland, Australia (7) 4773-2817

Jul. 9-10 2011 **KEPPEL BAY SHELL SHOW,** Yeppoon, Queensland, Australia
Gus Moore Pavilion at the Yeppoon Show Ground
Jean M. Offord, 277 McDougall St.,
N. Rockhampton, Qld. 4701, Australia (7) 4928-3509

Details pending **AMERICAN MALACOLOGICAL SOCIETY ANNUAL MEETING**, Pittsburgh, PA
www.malacological.org/meetings/next.html

DONALD DAN, COA Award Chairman
6704 Overlook Drive
Ft. Myers, FL 33919 U.S.A.
Tel. Voice & Fax (239) 481-6704
E-mail: donaldan@aol.com

Conchologists of America
Neptunea Award

The ***Neptunea*** **Award** (Brunner, 2000; Lipe, 2000) was established at the midyear (1999-2000) meeting of the COA Board in order to recognize outstanding and distinguished service to conchologists and malacologists in recognition of:

1. Service to the Conchologists of America.
AND/OR
2. Service to the scientific interests of Conchologists of America.
AND/OR
3. Service to the science of Malacology as it applies to conchologists anywhere.

Although exceptions have been made, the COA Board, which serves as the jury for the ***Neptunea*** **Award**, has traditionally weighed their consideration for award recipients toward (1) **amateurs**: those not currently pursuing a principal career involving collection, study, or commerce involving mollusks, and (2) **active members** of the COA. The nomination process will close on June 1, 2011 to give the Board time for discussion and balloting. Up to three awards have been made at annual conventions, beginning with the Houston event in 2000 (see below). Nomination(s) for the ***Neptunea*** **Award** may be made by **any COA member** and the format is simple:

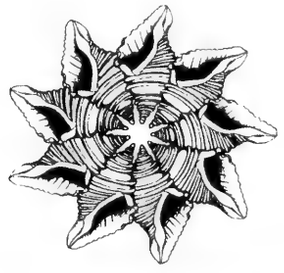
Name of nominee:
This person deserves this award because (here a somewhat detailed paragraph will suffice) .....
Signed .....

And either snailmail or email that nomination to

Harry G. Lee
COA *Neptunea* Award Coordinator
4132 Ortega Forest Drive
Jacksonville, FL 32210
<shells@hglee.com>

A ballot form will be included in the March, 2011 *American Conchologist*, but one need not mull it over all winter: the balloting is now open!

Previous ***Neptunea*** **Award** winners:
2000 (Houston, TX): Ross Gunderson, Ben and Josy Wiener, Debbie Wills
2001 (Port Canaveral, FL): Emilio Garcia, Harry Lee, Lynn Scheu
2002 (Sarasota, FL): Richard Petit, Bernard and Phyllis Pipher
2003 (Tacoma, WA) Jim and Linda Brunner, Kevin Lamprell, Doris Underwood
2004 (Tampa, FL): Bobbi Houchin
2005 (Punta Rassa, FL): Richard Forbush, Anne Joffe, William Lyons
2006 (Mobile, AL): Jack Lightbourn, Betty Lipe
2007 (Portland, OR): none given
2008 (San Antonio, TX): Bill Frank, Archie Jones
2009 (Clearwater, FL) none given
2010 (Boston, MA): none given



Brunner, L., 2000. The *Neptunea* Award. *American Conchologist* 28(3): 3. Sept.
Lipe, B[etty], 2000. Presidents Message. *American Conchologist* 28(4): 2. Dec.

Respectfully submitted,
Harry G. Lee
COA Director-at-Large

A rough few months for COA members; we lost four

Cecelia Abbott (1936-2010) was born in San Diego, California. She graduated from Woodbury College in California, and became a model and fashion coordinator for the Hecht Company in Washington, D.C. She had a love of nature and joined the New York Shell Club, where she met the already noted malacologist Dr. R. Tucker Abbott. The following account of his marriage proposal was provided by longtime COA member and *American Conchologist* editor, Lynn Scheu.

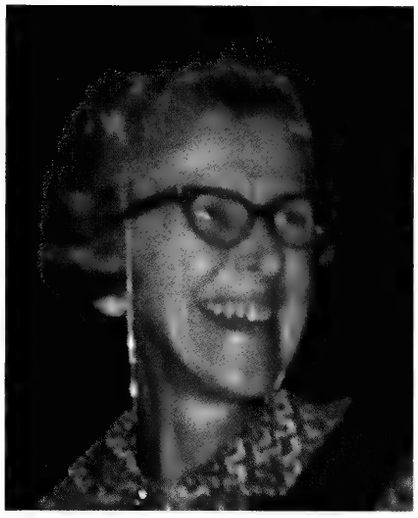
> My favorite Cecelia memory is a Tucker memory too. We were staying with them for a while, that same spring of their trip to Australia, when Walter Sage acted as their caretaker in Melbourne and mailed out the newly printed copies of the long awaited Standard Catalog of Seashells while they were away. We went beach walking, the day before they left. Cecelia and I wandered off together hunting angel wings in the muck. She began telling me little stories about Tucker. She noted that the angel wings always reminded her of bridal finery, all the lace and tucks and pleatings. Then she asked if she'd ever told me about Tucker's proposal. (I bet there are others of you out there that have heard this! She did love a good story as much as he did.) She said he left a note on her desk one day, asking her to marry him, and then added another note pleading, "Please type!" Then she did that uproarious laugh of hers and said, "Don't you think that's a scream? Ever the author, he wanted a secretary-typist too." And she took the "job."

Cecelia sent the "scrunched and worn-looking" "Please type" note to Lynn, who still has it. Cecelia supported Tucker's efforts in malacology and was an avid collector as well. She traveled around the world with Tucker and after his death she continued her collecting and added an interest in sea beans, becoming a member of the Sea Bean Society. All who knew her will remember her grace and ever present humor.

Mary Cecilia Flentz (1916 - 2010) lived in Carlsbad, California. She was married to John Flentz and had a long-time interest in shells and conchology. John and Mary lived in a number of California towns over the years and saw the state drastically change as it grew. Living in Carlsbad and walking the southern California beaches was a natural for somene interested in shells.

Gertrude Hildebrandt Moller (1920 - 2010) was born in Germany and immigrated to Chicago with her family when she was nine. She studied voice and was an accomplished coloratura soprano, singing with the Chicago Fine Arts Company. She moved to New York when she was 22 and sang with the USO throughout the war years. She had a minor part on Broadway, but her budding Broadway career was cut short when she met and Married Knud Moller, a marine engineer from Denmark. They moved to Jacksonville, Florida, in 1948 where Knud had an engineering job with a ship building company. In 1955 Knud's job required them to move to the Bahamas, specifically Eleuthera. Readers of this magazine know this locale is somewhat of a sheller's paradise, as it certainly was in 1955. Gertrude often said she was hooked, "When I picked up that very first shell…" She became an serious collector. They moved back to Jacksonville in 1957 and when a local paper ran a story of her rather extensive shell collection in 1959, she got calls from other shell collectors in the Jacksonville area. This led to an initial gathering at her house and the establishment of the Jacksonville Shell Club. Harry Lee, also a long-time member of the Jacksonville Shell Club said, "…the shelling world lost an abiding spirit. Among many other contributions to popular conchology, Gertie was the founder of the Jacksonville Shell Club and part of the mortar that held it together for decades." Gertrude was active with Pine Castle, a center for children with development disabilities.

Betty Jean Piech (1919 - 2010) was born and grew up in New Jersey. She graduated from Douglass Women's College (Rutgers University) and married Frank Piech in 1947. They moved to Wilmington, Delaware, were she worked as a home-maker and then went back to school to obtain a Library Science Degree. Betty worked as a librarian for many years before she retired. In the early 1960s the family started a tradition of vacationing on



Sanibel Island, Florida. Another rather well-known sheller's paradise. Of course, in those days it was a true island with access by ferry. Betty's interest in shells grew and in the 1970s she became quite involved with the newly established Delaware Museum of Natural History, especially its malacology department. Her interest in shells took her around the world with shelling stops at such places as: Africa, Australia, Indonesia, Malaysia, Fiji, French Polynesia, the Philippines, Samoa, and South America. Members of COA benefitted from these trips as Betty gave quite a few talks on her experiences around the world. Alan Gettleman provided the following.

> Betty Jean was always a bright spirit and fun to know. At one COA convention, I entered the lecture hall after the program had started and in the darkened room I saw pictures on the screen, heard a person speaking, but there was no one at the podium. Later I saw there was a person, Betty Jean, who was completely blocked by the height of the podium. Her programs for her far-flung trips were always wonderful, emphasizing the politeness of the need to learn and use the word for "Thank You" in every native culture she visited. I served with her on a COA committee and told her that I could always recognize her in a group photograph as she would always be 'the tall one' in the picture. She delighted in that title and in a written note to Tim Pearce, introducing me, said I was the one who gave her that epithet and that she even had a shirt made with 'the tall one' on it.

Betty Jean was active in COA and one of the early members of Conch-L, the COA list serve. In the mid to late 1990s Conch-L membership was much lower than today and Betty Jean was a major contributor. Her presence on Conch-L was a delight. While interested and knowledgeable about many aspects of conchology, Betty Jean was especially interested in the Ranellidae. She is the author of "Ranellidae and Personidae: A Classification of Recent Species," published in 1998.

THOUGHTS FROM A SHELL COLLECTOR TO HER FAMILY AND FRIENDS

I love a beach where seabirds cry,
Where the shining water meets the sky.
Where one can look for shells and things,
And gather the gifts that each tide brings.

I like to walk upon the sand,
Between the ocean and the land.
To breathe the wonderful salty air,
And feel the breeze blow through my hair.

I enjoy the pleasure these things bring,
They calm my mind and make my heart sing.
And even when I can't be there,
I always remember what the beach had to share.

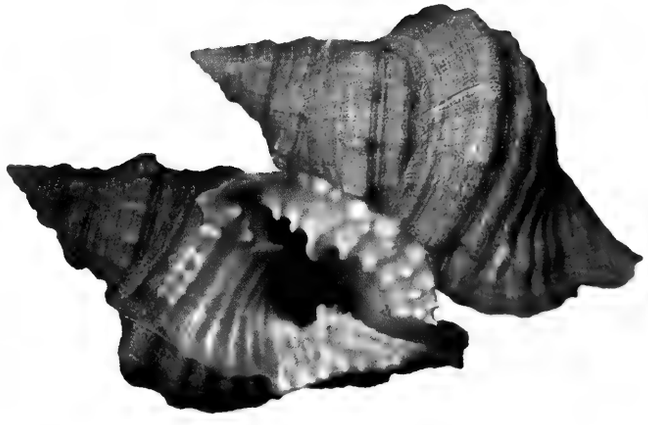
And if you happen to see a shell,
I hope this thought you'll remember well.
As I have prized each beautiful treasure,
So I value my family and friends in even greater measure.

And when the times comes I'm no longer here,
Do not think I have left you, never fear.
Just picture me happy on some distant shore
Picking up lovely things just as before.

For I will not have died, nor will I sleep;
I will see you again, so please do not weep,
I'll just continue happy in His peace and care
Until the time comes when you join me there.

I love each and every one of you.

Betty Jean Piech
September 3, 1995



Distorsio jenniernestae **Emerson & Piech, 1992**

Back to the Gulf of Aqaba: The search for rare shells of the Red Sea

By Moti Kovalis

The end of the winter is a good time to continue exploration dives in the Red Sea [Ed: see the previous article about the Gulf of Aqaba in vol. 37, no. 4, p. 4-6]. The weather is good (not hot) and the water is crystal clear. There are usually a number of mollusk species that seem to emerge after winter and there is definitely more activity underwater. It is always hard to explain why certain species suddenly appear after many years of absence, or disappear after years of presence, or appear in new localities. Common cowries such as *Cypraea staphylaea* Linneaus, 1758 or *Cypraea punctata* Linneaus, 1771, have been absent from this area for many years. There are not even records of dead specimens. Despite the temptation to blame weather, pollution, climate change, etc., there is no current scientifically based explanation for this phenomenon. Many mollusk species seem to come and go in a wave effect, for reasons still unclear. Only Mother Nature knows, and she is not talking.

Our plan for this exploration is to dive at three different locations. The first location is the northern point in the Gulf, near the border with Jordan. This location is interesting because it was for many years a battlefield: a long struggle between a private fish farm that placed fish cages in the sea and various "green" organizations that opposed this operation. After many years the Israeli court decided to remove the fish farm. The "green" organizations claim that the operation had a devastating effect on the original habitat as well as harming marine life throughout the Gulf. The fish farm claims the opposite. Both parties have stacks of supporting research, but in the end the cages are gone. From previous dives in the area some years ago, I remember many metal barrels and other metal structures, ropes, and tiers. It will be interesting to see what is left. The cages were placed at a depth of 25 meters; it will be a long swim. The spot will be hard to find since orientation under the water will be by compass only. The area is a no swimming zone (surface swimming). We have decided to dive during the day because we need better visibility to search for the correct spot and because this area is close to the Jordanian border and we really would not want to alarm the navy - of either country.

The swim to the area is without event, at a straight southeast direction from our entry point. In this northern area of the Gulf the bottom slopes downward more gradually than it does off the southern beaches. After 15 minutes we got to the spot. To my surprise the surrounding sea was cleaner than I remembered from two years ago. All that was left of the fish farm operation was an artificial reef probably planted to investigate the influence of the cages on the local marine life. The artificial reef is built from five- or six-meter long plastic pipes connected together to form a pyramid-shaped structure. The entire structure is surrounded by all kinds of fish (Fig. 1). What I am looking for is, of course, at the bottom of the structure where my target creatures are more likely to be found. Immediately I see a dead *Laevichlamys superficialis* (Forsskal, 1775) with both valves still attached. There are other

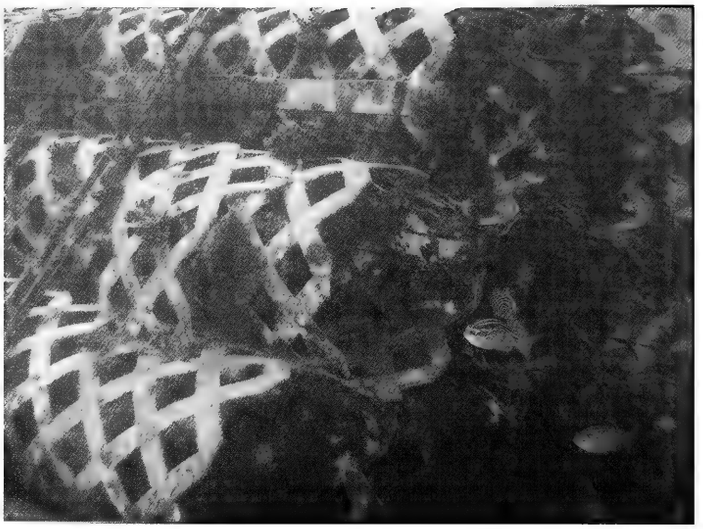
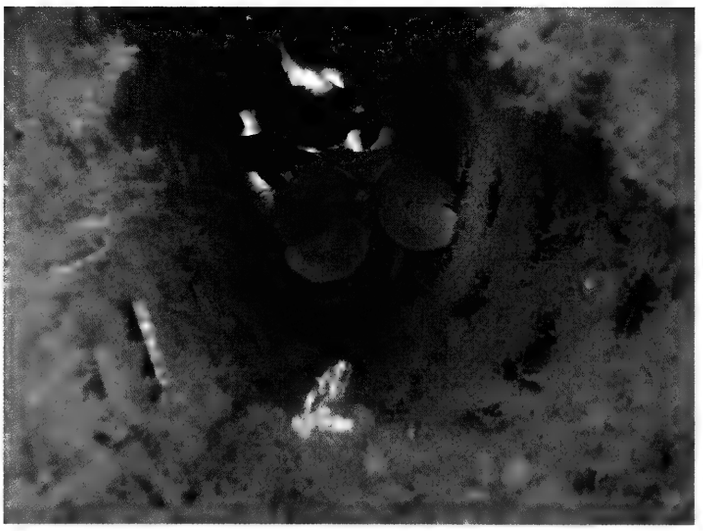


Fig. 1 (above) Remnants of the fish farm operation, now a home for many brightly colored fish that swim around and in the lattice-work pipes.
Fig. 2 (below) Interior view of one of the pipes with our lobster resident.



scattered dead bivalves, so it seems there is an octopus or other predator in this area. The various valves are not cracked or broken, so this may be a clue as to the identity of the predator. It is probably not an octopus. A look at the upper level pipes solves the mystery. Here we find a large lobster eating a pecten and guarding other bivalves (Fig. 2). In the picture it is difficult to see his unfriendly visage as he guards his a soon-to-be eaten *Glycymeris livida* (Reeve, 1843). I searched in vain for a living pecten hidden in the algae on this structure. I wanted to photograph a specimen *in situ*, but the lobster is certainly the better sheller, as I was unable to find a single live specimen. A further look in other pipes turned up lots

Fig. 3 (above) Looking deeper into the pipe we found more fish and a large *Cypraea* (*Mauritia*) *arabica grayana*.
Fig. 4 (below) The *Homalocantha anatomica elatensis* I spotted, despite its rather effective camouflage.

Fig. 5 A small brightly colored and nicely patterned *Conus* (*Cylinder*) *textile*, usually a shallow-water dweller.

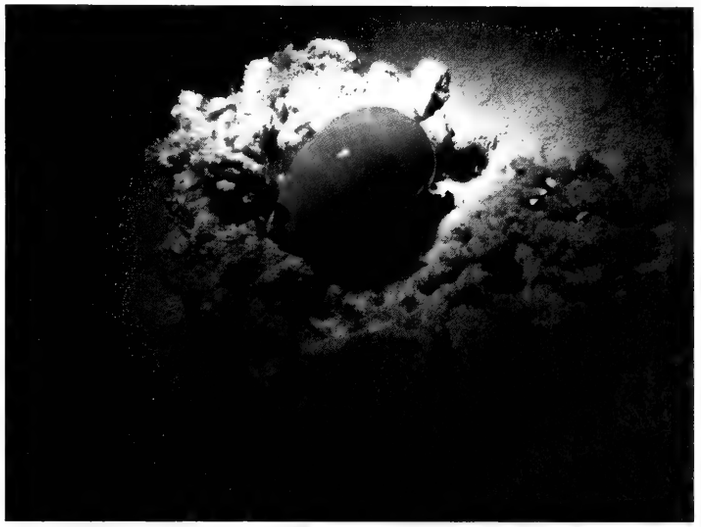


Fig. 6 This *Cypraea* (*Luria*) *pulchra sinaiensis* certainly is not well camouflaged. With its mantle retracted it really stands out in the dive light.

of colorful fish and a large *Cypraea* (*Mauritia*) *arabica grayana* Schilder, 1930, attached to a side panel (Fig. 3). It had completely withdrawn its mantle and was very easy to spot. Not far away I found another one, but in general it seems there are far more bivalves than gastropods in this area. The pipe structure is covered with large numbers of *Chama pacifica* Broderip, 1834. It is hard to identify them with the thick layer of algae covering everything. It was time to leave this area and rest up in preparation for our first night dive.

The night dive site is south of an oil terminal. The site is named the "the missile ship" because of a wrecked missile ship lying at 30 meters. The ship was one of five bought in Cherbourg, France, for the Israeli Navy. During the French military embargo after the 1967 Six-Day War, they were smuggled out at Christmas Eve. Today the ship is a diving attraction. Our dive is planned for a depth of 25 meters. In this particular location the descent begins immediately. At the bottom the corals are very dense and beautiful. Despite this, most of the dive is without any standout mollusk finds. Even digging in the sand fails to turn up the expected Mitridae and Terebridae. I do, however, spot a well-hidden *Homalocantha anatomica elatensis* Heiman & Mienis, 2009 (Fig. 4). It is amazing how well it is camouflaged. It is very hard to differentiate from the rock substrate. I only spot it because it sports a new white whorl, not yet algae covered. After a few minutes I see among the rocks a small *Conus* (*Cylinder*) *textile* Linnaeus, 1758 (Fig. 5). What is it doing at this depth? It is usually a shallow water dweller in the Gulf of Aqaba.

As always the dive computer spoils all the fun and reminds us it is time to leave. On the way back to shore we find the surprise of the dive. At around 18 meters is a beautiful and rare *Cypraea* (*Luria*) *pulchra sinaiensis* Heiman & Mienis, 2000 (Fig. 6). Strangely, like the *C. arabica grayana*, it also has the mantle retracted. Unfortunately I don't have time to get a really good photo.

On our last morning we rush to exchange our diving tanks. Our dive will be in a restricted area near a shopping mall. This means we need to get in the water early, before the tourists

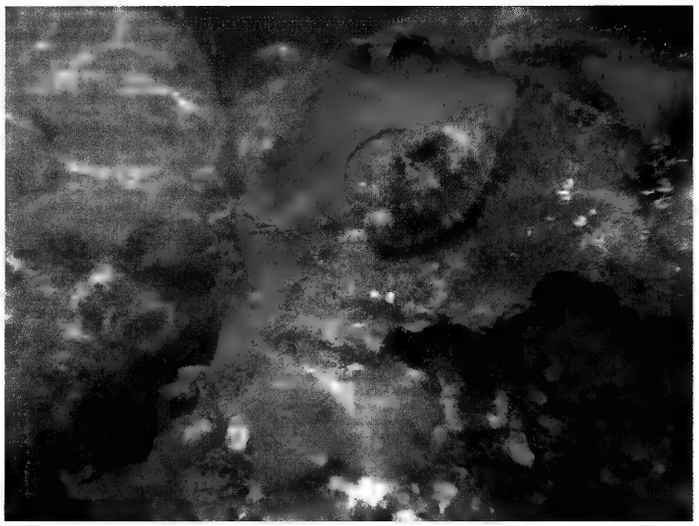
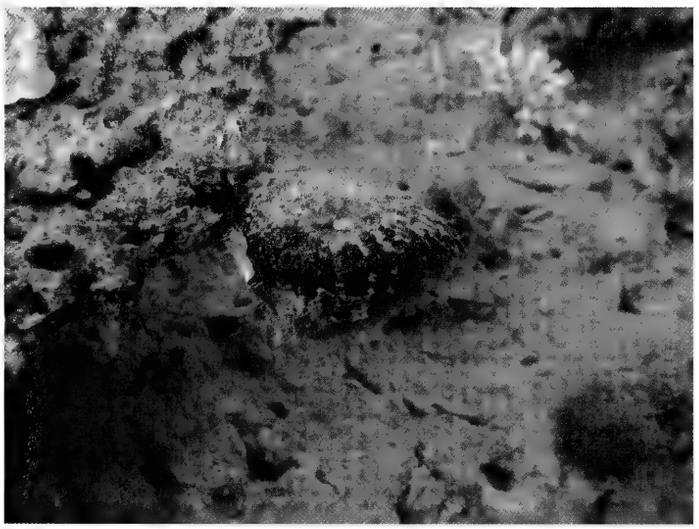


Fig. 7 (above) ***Cypraea* (*Bistolida*) *erythraeensis*, a rare species in this part of the Gulf of Aqaba and the first cowrie we have seen on this dive with an extended mantle.**
Fig. 8 (below) A well camouflaged *Spondylus smytheae*, still an exciting find this far north in the Gulf of Aqaba.



line the beach and hit the water with their jet skis. The depth will be 30-35 meters, so it will be a short dive. Two minutes into the dive, before the real descent phase, I spot *Cypraea* (*Bistolida*) *erythraeensis* Sowerby, 1837, a rare species in this part of the Gulf of Aqaba (Fig. 7). Finally we have found a cowrie with full mantle extension. A light touch of my finger exposes the distinguishing red blotches on its dorsum. In the south, along the beaches of Sinai, it is not a rare sight, but it is seldom seen this far north. Nice start. The swim to 35 meters is fast. At the end of the dense reef on one of the rocks I can see *Spondylus smytheae* Lamprell, 1998 (Fig. 8). This was a rare species in the Gulf, but has become more common recently. There was not much to find at this depth, so we head back to shallower waters. At night in the shallow water there are many specimens of both *Cerithium adansoni* (Bruguière, 1792) and *Fusinus polygonoides* (Lamarck, 1822). During the day, however, all that is evident are tracks in the sand. As we finish off our third and final dive I attempt to guess which species made which track in the sand.

Our winter dive is now over and we pack up to depart this interesting area. We will return in May to some new dive sites to see what treasures await us in the Gulf of Aqaba. In the meantime we have specimens to clean and photographs to go through looking for the few that best represent our explorations of this relatively unknown part of the world.

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First Modern Shell Show in China

as reported by Robert Janowsky

On the 16th and 17th of October 2010, a group of shell collectors gathered in Beijing, China, for the first, of what is hoped to be an annual, shell show in China. These pictures were taken by Fan Zhang and forwarded by Wu Jingyu, a friend of Bob Janowsky. From the images you can see they made a good start with a nice selection of both marine and land shells. Attendance figures are unknown, but it appears that those who did attend were quite interested. Due primarily to the Internet and online auctions, there are several shell dealers in China who now regularly supply worldwide collectors. Hopefully this interest will continue.

Above: The participants in the first shell show in China, from left to right, bottom to top: Wei Hu, Yang Wang, unknown, Xiaoguang Li, Jin Chen, Liqian Zhou, Fan Zhang, Fan Zhang [yes, two], Xin Deng, Youning Wang, Qicong Li, unknown, Qing Feng, Yifeng Lu, Peng Wei, Xin Qian, Huabing Liang, unknown, Yang Wu, Hanchen Wang unknown, Junyi Du. Photos are offered by Fan Zhang.

Below: The room begins to get a bit crowded as the day goes on. Hopefully there are some young future shellers there.

Above: Overhead view showing the tables with a few early visitors.

Below: One of the tables with a nice selection of shells.

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Conus recurvus Broderip, 1833: One Mo' Time

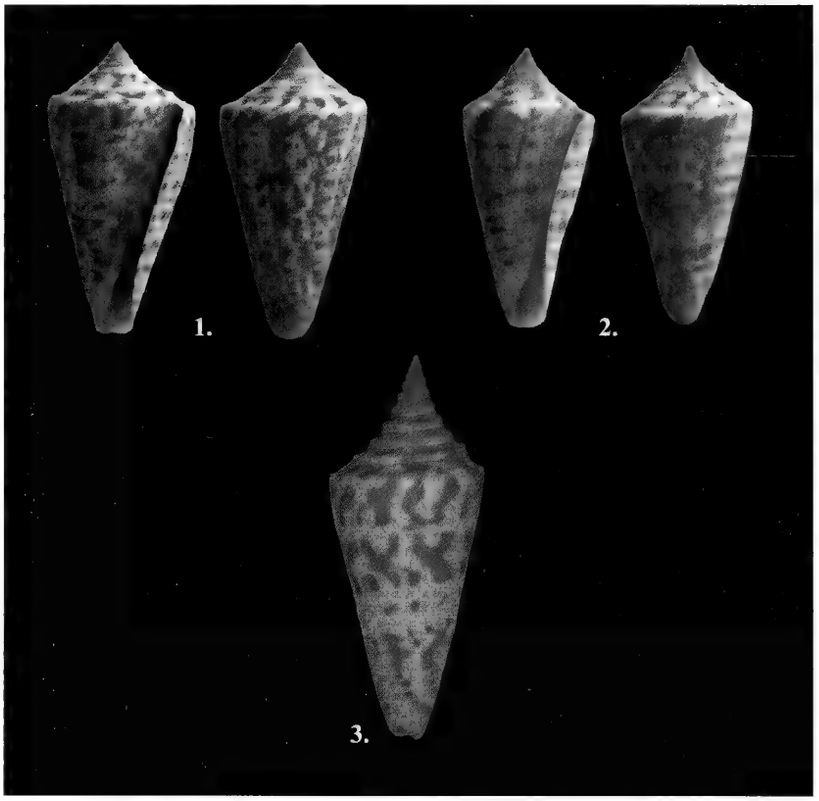
By J. M. Inchaustegui

In a recent article that appeared in the *Triton*, the *Epitonium*, and the *American Conchologist*, I discussed some shells I obtained from the Houston Conchology Society that had been donated to the Club by the Houston Museum of Natural Science. In the article that appeared in the *American Conchologist* Vol. 38, No.3, September, 2010, Mr. Tom Eichhorst added a footnote that read, "*Conus recurvus* Broderip, 1833, is apparently no longer valid as the type does not match shells of that name, the correct name is probably *Conus (Kohniconus) emarginatus* Reeve, 1844."

This made me ponder so I checked my literature to see what I could find. In Abbott's "American Seashells" he shows *Conus recurvus* Broderip, 1833, as valid with synonyms *Conus scriptus* Dall, 1910, and *Conus magdanelensis* Bartsch and Rehder, 1939. These synonyms only showed that this cone was probably very variable.

So next I checked Keen's "Sea Shells of Tropical West America" Second Edition, which showed *C. recurvus* Broderip, 1833, to be valid with synonyms: *Conus incurvus* Sowerby, 1833; *Conus emarginatus* Reeve, 1844; *Conus scariphus* Dall, 1910; and then it showed that *Conus regularis* Sowerby, 1833, was valid with several synonyms: *Conus syriacus* Sowerby, 1833; *Conus angulatus* A. Adams, 1854; *Conus magdalenensis* Bartsch & Rehder, 1939; *Conus monilifer* Broderip, 1833; *Conus gradatus gradatus* Wood, 1828; *Conus gradatus thaanumi* Schwengel, 1955; and *Conus recurvus helenae* Schwengel, 1955.

This did not leave me with any positive thoughts about any of the above so I then contacted one of my shell collecting friends that has an extensive collection and a vast library of literature to ask his opinion of this footnote and he was kind enough to e-mail me two scanned paragraphs of "A Chronological Taxonomy of *Conus,*1758-1840," which was published in 1992 by Dr. Alan J. Kohn and reads as follows (pg. 246): "Although Nybakken (1970) reported the radulas of *C. recurvus* and *C. regularis* to differ strikingly, it is not clear from his illustrations of shells (Nybakken, 1970: figs. 35-39 that his concept of *C. recurvus* is consistent with the specimen (Fig. 36). Hanna (1963:30) suggested that "*C. regularis* is not very distinct and intergrades with *gradatus, scalaris,* and *recurvus*. Pending further study of this difficult complex, I tentatively conclude that *C. recurvus* Broderip 24 May, 1833, is a junior synonym of *C. regularis* Sowerby, 17 May, 1833." Later on Kohn continues (Pg. 274): "The result of this is that *C. arcuatus* Gray, 1839, is a junior primary homonym but not a synonym of *C. arcuatus* Broderip and Sowerby, 1829. Because the former species is valid, it takes the next available name applied to the taxon. Reeve (1844: pl.43, sp. 232) renamed *C. arcuatus* Gray as *C. emarginatus.* I thus conclude that *C. arcuatus* Gray, 1839, a junior primary homonym but not a synonym of *C. arcuatus* Broderip and Sowerby, 1829, is *C. emarginatus* Reeve, 1844."



1. *Conus recurvus* Broderip, 1833, (left) Manzanillo, Mexico, 48mm, August 1975, col. Theresa Stelzig; (right) Guaymas, Mexico, 49mm, November 1968, col. Lucia Leing.
2. *Conus regularis* Sowerby, 1833, (left) San Carlos, Mexico, 46mm, January 1971, col. Leola Glass; (right) Agua Verde, Mexico, 47mm, November 1975, col. unk.
3. *Conus scalaris* Valenciennes, 1932, Baja California, Mexico, 60mm, March 2009, col. unk.

In view of all of the above, I will change my *C. recurvus* labels to "*Conus regularis* Sowerby, 1833" but don't take my word for this since all of this is in flux and may change any day. Do your own research and proceed accordingly. The accompanying photograph may or may not shed light on this. Photo by the author.

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The rise and fall of "*Conus recurvus* Broderip 1833"

By Bruce Neville

In an article in the September 2010 issue of *American Conchologist*, J.M. Inchaustegui identified two figured cone specimens from western Mexico as "*Conus recurvus* Broderip 1833." Taking a second look at the shells in Mr. Inchaustegui's illustrations, I tentatively identify them as *Conus regularis* (Sowerby I 1833). The two species, "*C. recurvus*" and *C. regularis*, are not as easily separated as one might think, at least on conchological characters.

Our long-suffering Editor's "innocent" note attached to Mr. Inchaustegui's article regarding the taxonomic status of "*C. recurvus*" has led to some interesting discussions. When I (Neville 2010) reviewed Tucker and Tenorio's "*Systematic classification of Recent and fossil conoidean gastropods*" (2009), I was puzzled that the shell that has long been called "*Conus recurvus* Broderip 1833" was not included, and finally found it under the name *Kohniconus emarginatus* (Reeve 1844), type species of the genus *Kohniconus* Tucker and Tenorio 2009. I was surprised that such a longstanding name for such a well-known shell as *Conus recurvus* could have been replaced, but they did not discuss the reason(s) for the change (that not being the function of their work), so I did some research into the matter. I did not have space in that review to go into the nomenclatural legalities, but, since it has come up again, I've decided to go into more detail on the story. Here goes.

G.B. Sowerby I described and figured *Conus regularis* in the *Conchological Illustrations*; that portion of the *Illustrations* was issued 17 May 1833. W.J. Broderip described *Conus recurvus* in *Proceedings of the Zoological Society of London* without illustration; that part of the *Proceedings* was issued 24 May 1833, or one week after Sowerby's name. [The article is attributed to "Broderip and Sowerby," but individual names are credited to one or the other with initials.] The primary types of *Conus regularis* Sowerby "II" [sic] 17 May 1833 and *Conus recurvus* "Broderip and Sowerby" [sic] 24 May 1833 are illustrated in the Type Gallery of the *Conus* Biodiversity Website (Kohn & Anderson, n.d.) and obviously belong to the same, highly variable species (Figs. 1 & 2, respectively).

In his review of the Eastern Pacific *Conus*, Hanna (1963) figured a "hypotype" (a term without definition or standing in the International Code of Zoological Nomenclature) of *Conus recurvus* Broderip 1833. Unfortunately, this specimen was not conspecific with Broderip's type. Apparently Keen (1971), Abbott (1974), and many others took the specimen illustrated to represent "*Conus recurvus* Broderip 1833," and the name was widely applied to the species illustrated by Hanna. Walls ([1979]) was perhaps the first to recognize that the holotype of *Conus recurvus* Broderip 1833 did not represent the species to which the name was then applied, but chose not to open that particular can of worms.

In 1839, J.E. Gray illustrated a shell as "*Conus arcuatus* Broderip and Sowerby 1829." Reeve recognized that Gray's illustration was not the *C. arcuatus* of Broderip and Sowerby (Fig. 3) and so gave it the replacement name *Conus emarginatus* in his *Conchologia Iconica* in 1844. Coomans, Moolenbeek, and Wils (1981), in reviewing the status of the name *Conus arcuatus* Gray 1839, realized that the types of *C. recurvus* and *C. regularis*

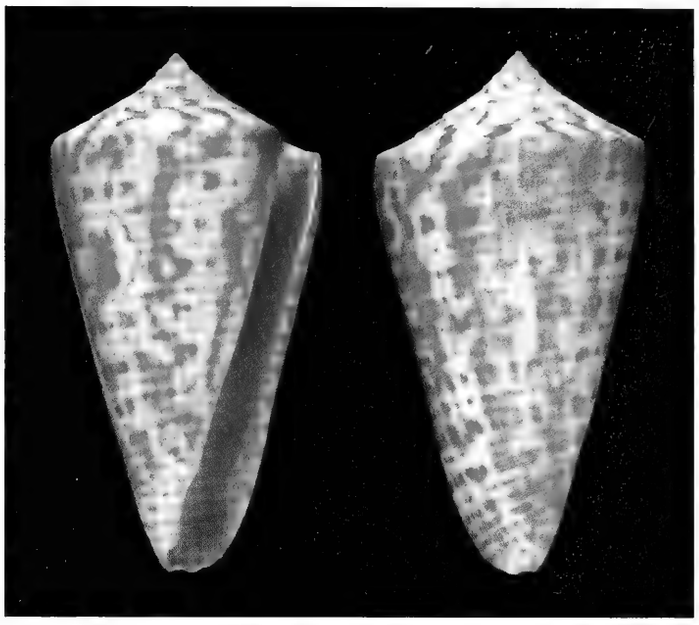
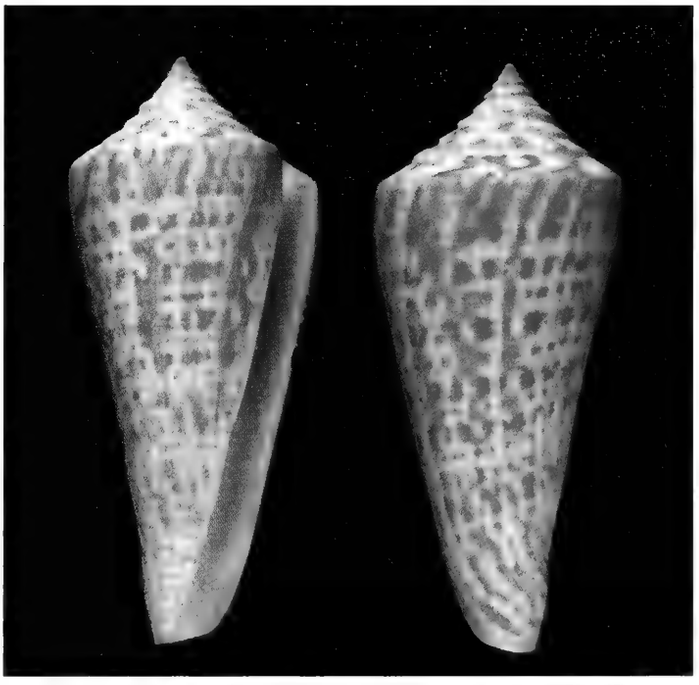


Fig. 1 (above) *Conus regularis* G.B. Sowerby II [sic], 1833, representation of lectotype, Sowerby (1833: pt. 29, fig. 29), no type locality or size provided, photo by Alan J. Kohn, Conus Biodiversity Website, with permission, http://biology.burke.washington.edu/conus

Fig. 2 (below) *Conus recurvus* Broderip & Sowerby [sic], 1833, lectotype, British Museum of Natural History, 52mm, type locality: Monte Christi, Colombia, photo by Alan J. Kohn, Conus Biodiversity Website, with permission, http://biology.burke.washington.edu/conus



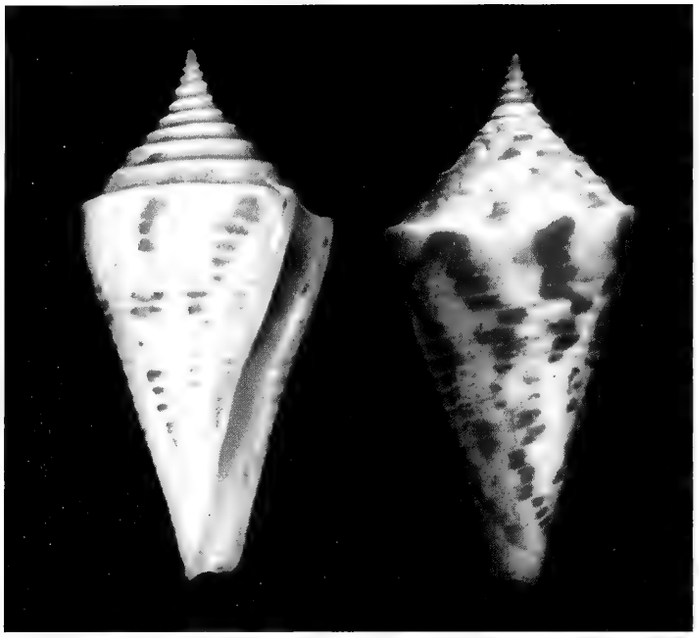


Fig. 3 *Conus arcuatus* Broderip & Sowerby, 1829, neotype, British Museum of Natural History, 42.5mm, type locality: near Mazátlan, Mexico, photo by Alan J. Kohn, Conus Biodiversity Website, with permission, http://biology.burke.washington.edu/conus

represented the same species and that the next available name for the "shell formerly known as *recurvus*" was thus *C. emarginatus* Reeve 1844, but this change was not picked up in the broader literature. Tucker and Tenorio, with their encyclopedic knowledge of cone taxonomy, were aware of the change and used it correctly in their recent systematic work. This is the "shell formerly known as *recurvus*" and is the first available name for that species.

There are two "take home" lessons from this story:

1. Always refer to (trusted) types wherever possible, when making identifications, and

2. None of this should detract from the interesting observation reported by Mr. Inchaustegui!

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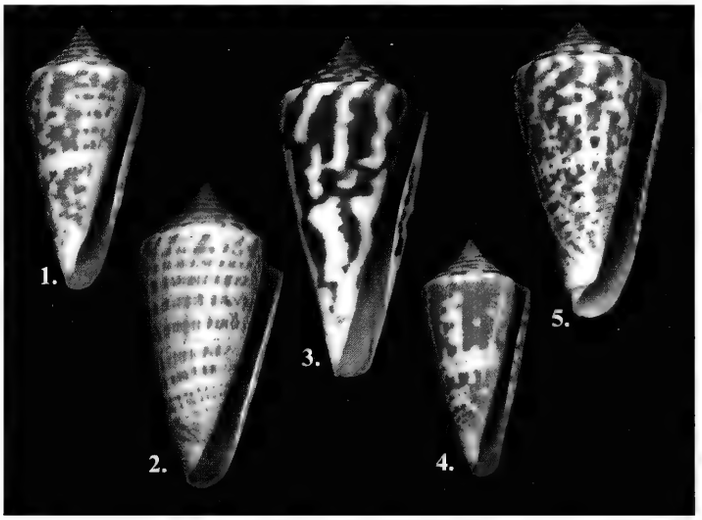

Fig. 4 (added) These are shells from the editor's collection that have labels stating they are *Conus recurvus* (no. 3), *Conus regularis* (no. 1 & 5), and *Conus gradatus* (no. 2 & 4). Applying what we now know(?), they are: 1. *Conus regularis* 45mm, Gulf of California; 2. *Conus regularis* 52mm, Algodones, Mexico. 3. *Conus emarginatus* (the former *C. recurvus* of authors) 58mm, Pacific Panama; 4. *Conus regularis* 40mm, San Carlos, Mexico; and 5. *Conus regularis* 51mm, Gulf of California. The "actual" *Conus recurvus* (based on the type specimen as opposed to authors accounts) is a synonym of *Conus regularis*, while the name *Conus recurvus* was incorrectly applied to *Conus emarginatus*. All clear?

An Eleutheran Adventure:

My First Live Shell Collecting Trip

Amelia Ann Dick (Amy)

Sunday, May 23, 2010

A small and diligent group of shell enthusiasts, George and Amy Dick, Jim and Bobbi Cordy, Ellen Bulger, Judy Herman, and Beverly Snyder were eager for our journey to begin. We all converged at Twin Air Calypso, a small charter and cargo airlines in Fort Lauderdale, Florida, for a short afternoon flight to Rock Sound, Eleuthera, Bahamas. While in the air I observed the beautiful clear, calm, turquoise blue water of the Caribbean Sea and my heart filled with a sense of adventure and the excitement of discovery. Upon arrival, we quickly loaded the rental cars and were off to our cottages in the small picturesque town of Tarpum Bay (Fig. 1). We were greeted by a kaleidoscope of cheerful brightly painted houses and shutters in every color imaginable. We were finally there and on "Island Time." After filling the fridge/freezer with a week's worth of meals, we hastily donned our skins to take advantage of late afternoon, bright sun, and snorkeling at a place located four miles north referred to as Xeno Beach.

Fig. 1 Street scene from our cottage on Tarpum Bay. It is just as tranquil gorgeous as it looks here.

Xeno Beach is a dream come true for beach collectors. A variety of species were available for the picking. All that was required was a sharp eye, a good back, and a container to place all that "loot." A very small list of beach finds included limpets, bubbles, nerites, mussels, clams, cones, tellins, ceriths, tegulas, and those beautiful, although fragile, green and white sea urchin tests.

Immediately upon entering the water for my first Eleutheran snorkeling adventure, I found a dead Atlantic partridge tun (*Tonna maculosa* (Dillwyn, 1817)) in less than a foot of water on rocks. Ellen found a dead typhis triangularis (*Tripterotyphis triangularis* (A. Adams, 1855)). Jim fared even better with a live *T. triangularis* and Tom McGinty's murex (*Murexiella mcgintyi* (M. Smith, 1938)). This was an exciting beginning.

Monday, May 24, 2010

The start of our first full day began with Bobbi serving her delicious almond coffee cake for breakfast, an Eleuthran tradition with the Cordys. After packing lunches we were off on our morning excursion to Half Sound on the east side of the island. We observed a multitude of empty queen conch shells that had been strewn about like litter. This beach was definitely popular with Bahamians as a collecting and cleaning spot for what is a major staple of their diet. The place was so very quiet and still and a small sparkling crystal-clear stream emptied into the Sound. The water temperature was approximately 77-78°F. The snorkelers encountered grassy bottoms with intermittent sand patches. We spotted many juvenile queen conchs, called pink rollers. They were photographed, but none were taken. Jim and Ellen snorkeled further out and down the shore. Jim took an adult West Indian chank (*Turbinella angulata* (Lightfoot, 1786)) (Fig. 2) and a king helmet (*Cassis tuberosa* (Linnaeus, 1758)). Ellen turned over a sponge on turtle grass in 2½ feet of water and found a beautiful live Atlantic yellow cowrie (*Erosaria acicularis* Gmelin, 1791) (Fig. 3). I found two amber pen shells in sand (*Pinna carnea* Gmelin,

Fig. 2 "Traveling incognito," *Turbinella angulata*. Photo by Ellen Bulger

Fig. 3 *Erosaria acicularis* in situ. Photo by Ellen Bulger.

Fig. 4 *Volvarina jimcordyi* in situ, along with an unidentified chiton and a couple of mystery gastropods. Photo by Ellen Bulger.

1791). After several hours of snorkeling, beach combing, and lunch, we were off again for another totally different destination.

We filled our afternoon with the delights of Islandica Beach, a.k.a. Larry's Beach, on the Atlantic Ocean. It was quite windy and the water was very choppy. Large coral heads make up the reef with a myriad of brightly colored fish and marine life. Jim found two adult queen conchs (*Strombus gigas* Linnaeus, 1758). No pearls. Ellen found a rams horn shell (*Spirula spirula* (Linnaeus, 1758)) on the beach at the high tide mark. It is the interior structural support of a deep water squid-like cephalopod and functions as a buoyancy device. The group found many lovely sunrise tellins (*Tellina radiata* Linnaeus, 1758), turkey wing arks (*Arca zebra* (Swainson, 1833)), red brown arks (*Barbatia cancellaris* (Lamarck, 1819)), speckled tellins (*Tellina listeri* Roding, 1798), and common Atlantic marginellas (*Prunum apicinum* (Menke, 1828)). Four-toothed nerites (*Nerita versicolor* Gmelin, 1791) were observed moving about intertidal rocks.

As soon as we got back to the cottage, Ellen crossed the street, went down some steps leading to a small beach, and stepped into Tarpum Bay. She hit "pay dirt" and came back with a beautiful live deep-colored orange lace murex (*Chicoreus florifer* (Reeve, 1846)). She also brought back apple murex (*Chicoreus pomum* (Gmelin, 1791)). Time well spent!

Tuesday, May 25, 2010

Today our group split up and went to two locations. Jim, George, and Ellen headed for Winding Bay. The rest of us visited Palmetto Point Salt Pond. Both of these sites offered specific shell takes. Winding Bay did not disappoint. Jim found what he went looking for taking four *Conus abbotti* Clench, 1942. The largest was approximately 33mm. He also found a live measle cowrie (*Macrocypraea zebra* (Linnaeus, 1758)) and the Atlantic Triton's trumpet (*Charonia variegata* (Lamarck, 1816)). Ellen found a helmet that may possibly be a hybrid between a flame helmet (*Cassis flammea* (Linnaeus, 1758)) and a king helmet (*Cassis tuberosa*). George found one *S. spirula* at the high tide mark on the beach.

My group started off with a little sightseeing and shopping at Governor's Harbor. We then headed for a special place called Palmetto Point Salt Pond. On the "hit list" for this excursion was the little black murex *Chicoreus dunni* Petuch, 1979. This murex is endemic to this location only and I took most of mine in less than three feet of water on rocks and silty bottom. There was certainly no trouble finding them. Another lovely day in paradise!

Wednesday, May 26, 2010

Today we visit a saltwater lake named Sweetings Pond. The main objective is to collect *Volvarina jimcordyi* Cossignani, 2007 (Fig. 4). This tiny margin is endemic to this pond only and Jim and George took many from under rocks. True tulips (*Fasciolaria tulipa* (Linnaeus, 1758)) were everywhere! The ones found here are mostly dark shades of brown and light tan. They were taken in less than three to four feet of water on sand and in grassy spots. George and Ellen observed an octopus hiding amongst rocks (Fig. 5). Ellen's description is as follows "chromatophore color change from cupcake pink frosting, shifting to deep salmon, to pale lime green, almost fluorescent with differing patterns." George and I were thrilled to see two seahorses. Ellen found two pregnant males. Mahogany-and-yellow colored egg cockles (*Laevicardium laevigatum* (Linnaeus, 1758)) were found by everyone.

After our picnic lunch, we drove north on Queen's Highway to see the Glass Window Bridge. This is a unique place where one can observe the Caribbean Sea on one side of the bridge and the Atlantic Ocean on the other with one glance. My first observation was the extreme differences between the two bodies of water. The Caribbean quite peaceful and pale blue, the Atlantic dark blue and extremely rough, with powerful waves crashing high onto rocks. We found time for a little shopping on our way back home and I was already thinking about tomorrow.

Thursday, May 27, 2010

Millar's Beach! Goodies in and out of the water. A shell collector's paradise. As soon as I walked on the beach, I spied a beautiful dead and clean flame helmet in excellent condition. It had washed up in weed drift at the wrack line. Also, there were many juvenile queen conchs, mostly dead and crabbed amongst

Fig. 5 Octopus species. Photo by Ellen Bulger.

the weed. After walking much of the beach, I discovered a perfect dead and clean lamellose wentletrap (*Epitonium lamellosum* (Lamarck, 1822)) and a gorgeous dead and clean costate horn shell (*Cerithidea costata* (da Costa, 1778)), along with a Barbados miter (*Mitra barbadensis* (Gmelin, 1791)). All of us observed large chitons on intertidal rocks. I had the good fortune to find a live mouse cone (*Conus mus* Hwass, 1792) moving around a rocky intertidal pool at mid-day. On the beach, Ellen found a dead hawk-wing conch (*Strombus raninus* Gmelin, 1791) and a long-spined star-shell (*Astraea phoebia* Roding, 1798). In the water she took the little white-spotted miter (*Mitra puella* Reeve, 1845), a crown cone (*Conus regius* Gmelin, 1791) and a dead and clean juvenile Atlantic yellow cowrie. Jim collected two flame helmets and a large West Indian top shell (*Cittarium pica* (Linnaeus, 1758)). He also found two fresh dead and clean true tulips in excellent condition, one an exceptional orange color and the other light brown/tan.

Everyone prospered on the beach, picking up a variety of shells that included tusks, coffee bean trivias, the gaudy asaphis, Atlantic morums, Jasper cones, common dove shells, ivory ceriths, common West Indian bubbles, black-ribbed limpets, Barbados keyhole limpets, the tinted catharus and chestnut latirus, gold-mouthed Tritons, and colorful Atlantic moons. There were many washed up sea biscuits and sand dollars. This beach is truly a natural wonder and fit the bill for all of us.

Friday, May 28, 2010

Upon waking this morning, the realization that my time in Eleuthera was swiftly drawing to a close is first and foremost on my mind. Little did I know that snorkeling north of Governor's Harbor Airport was destined to become a very exciting day. Jim and Ellen chose to snorkel and swim some of the shoreline and were dropped off nearly two miles away from our destination. After almost three hours we spotted them making their way down the beach towards us. Jim took some lace murex. Ellen found seven carrier shells (*Xenophora conchyliophora* (Born, 1780)), with five being live takes and two dead. Xenos are her favorite shells. George and I took West Indian chanks, which were collected on sand in approximately eight to ten feet of water (Fig. 6). It was so much fun bringing them up as they are a big and heavy shell with the most interesting black animal inside. We kept the three largest adults and put the others back in to live and reproduce. The very strange chank egg cases somewhat resembled long chains of those no-spill plastic lids used to cover drinking cups. They were attached to what I believe was soft coral known as the black sea rod. We also collected milk conchs (*Strombus costatus* Gmelin, 1791). I got a kick out of seeing the attractive animal responsible for making such an exquisite work of art. Wow, great shell booty!

Fig. 6 West Indian chank shells, *Turbinella angulata*.

Saturday, May 29, 2010

This morning we are heading south past the town of Rock Sound. We cross a small bridge and park our cars. This habitat is very rocky. We carefully make our way out. Once again, Ellen discovers another small octopus. We carefully play with it for a few minutes then went on our way. I saw many beautiful yellow and black colored mussels in extensive beds and delicate file clams on rocks with valves open and tentacles gracefully swaying with the current. I was fortunate to find deltoid rock shells (*Thais deltoidea* (Lamarck, 1822)) and West Indian stars (*Lithopoma tectum* (Lightfoot, 1786)), both species attached to rocks. I also

find lace murex and apple murex. Jim finds McGinty's murex and glossy dove shells (*Nitidella nitida* (Lamarck, 1822)). Ellen finds a dead and clean immature purple milk conch along with lace murex. A great haul!

This afternoon we explore a beach that no one in our group has ever seen. In my opinion, this was THE most beautiful beach and reef we had been to all week. The deserted beach is named Whiteside and is on the Atlantic Ocean. White and pink sand, softly swirled together like a parfait that has only been lightly stirred. A palette of dreamy water colors with hues in turquoise and teal. The reef alive and teaming with lacy purple fans, large sponges, coral reefs separated by white sand bottom corridors, which became a snorkeler's highway. Heaven truly does exist on Earth! With all this natural beauty to absorb, one can truly forgive the fact that this beach offers nothing for shell collectors. In fact, it was difficult to find any shell of any kind whatsoever, but there were a couple of surprises to be relinquished by the ocean. Ellen found two king helmets, one live and the other being the most outstanding, clean and fresh dead, with markings so rich and dark in color, it would have "knocked my socks off" had I been wearing any. I plucked a pretty flamingo tongue (*Cyphoma gibbosum* (Linnaeus, 1758)) from a purple sea fan and I found an Atlantic Triton's trumpet attached to the wall of the reef. The shell was of poor quality so I returned it. Even though we hit rock bottom as far as shelling goes at this location, for me, the sheer beauty of the place puts it at the top of the list to visit again on my next trip. In my opinion, it is a feast for the eyes.

Sunday, May 30, 2010

The day of reckoning has arrived, and the critical question is will all of those frozen shells make it home frozen, or at least semi-thawed? Another thought was how heavy are we now? We found out in Ft. Lauderdale upon checking in for our flight. We definitely were over the weight limit and paid the additional fee. I must confess it must have been those four liters of Ricardo Rum that tipped the scales upward, but it was worth it!

A Few Things Learned

1. How helpful it is to have daily high and low tide schedules to plan for a successful shell hunt.

2. How amazing it is to see color differences in the same species such as true tulips that differ from one location to another, being separated by only a few miles.

3. How crucial habitat is to the viability of shell speciation, such as *Chicoreus dunni* and *Volvarina jimcordyi*, which are endemic to only two different salt ponds on Eleuthera.

4. How crucial it is to keep a daily log or journal to record what shells were found where, along with pertinent habitat information to create accurate identification slips.

5. Always "hang" king helmets immediately to help hasten the cleaning process.

6. Bug spray is as important as bottled water.

7. Enjoy Kalik Beer and Ricardo Gold Rum which is made only in the Bahamas.

8. Empty Pringles Crisps canisters make great shell collecting containers.

9. Take time to visit with the locals and be a good American ambassador.

10. If one must drive with parking lights on during daylight hours, be absolutely sure you turn them off before leaving your rental car, as getting a jump may be just as difficult as calling Triple A.

11. How wonderful it is to share a cottage with a woman who has taken the time to cook, freeze, and fly six complete and nutritionally balanced meals from the U.S. to a Bahamian island.

12. I had so much fun I can hardly wait to return.

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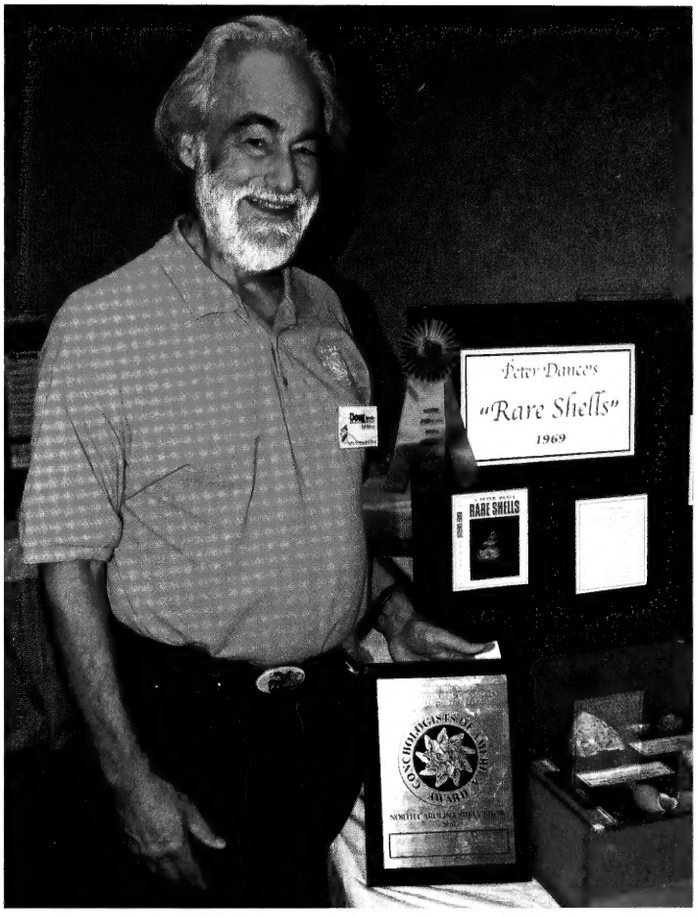
COA Award Winners

Doug Wolfe won the COA Award at the North Carolina Shell Show, 25-26 September 2010. Doug's display was a showing of 49 of the 50 shells listed by Peter Dance in "Rare Shells," (1969). Amassing 49 of the 50 shells listed by Peter Dance is no mean feat. Of the shells listed, Dance says, "A book like this is necessarily a very personal, subjective affair…" So too is attempting to collect these same species. Yes, many are now fairly commonly available, but just as many are still uncommon enough to command hefty price tags and a few are famously difficult to obtain. There are rarer shells, but these were both rare and showy. Doug's display encompassed 6 cases spread over 13 feet. Like Dance's book, he presented much more than just the shell. He also summarized the history of each shell as provided by Dance and then updated the collecting history from when Dance wrote "Rare Shells." It was an eye-catching display, well worth winning the COA Award. There were a total of 190 feet of shell display at this year's event. Judges were Dr. Harry Lee and Brain Hayes; Shell Show Chairman was John Timmerman. Other winners at the show were:

DuPont Trophy - Ed Shuller & Jeannette Tysor for "Mystery of the Migrating Mollusks."
Hugh Porter Award - Vicky Wall for "Self Collected Shells from North Carolina."
Dean & Dottie Weber Award - Vicky Wall for "The Queen Conch - Icon of the Caribbean."
Shell of Show any source - Ron Hill for *Austroharpa exquisita*
Shell of Show self-collected - Vicky Wall for *Decatopecten noduliferum*



Doug Wolfe with his COA Award won for his display of Peter Dance's "Rare Shells." The caption for each shell included its present status and collecting history.

Karen VanderVen won the COA Award at the Philadelphia Shell Show, 9-10 October 2010. Karen's display was "Volutes of the Tropical Western Hemisphere." She had 8 cases displayed in over 22 feet with volutes from all areas of the tropical Western Hemisphere. Karen's display was well thought out and exhibited the many forms, colors, and sizes of this varied group of volutes. The Philadelphia Shell Show is a large well attended event with stiff competition in any category imaginable. This year there were over 350 feet of exhibit cases and an attendance well over 1,000. Judges were Dr. Ellen Strong and Dr. M.G. Harasewych, Shell Show Chairman was Paul Callomon, and Exhibits Chairman was J.B. Sessoms. Other winners at the show were:

DuPont Trophy - John & Darlene Schrecke for "True Conchs of the World."
Masters Award - Gene Everson for "Seashells of the New Millennium, Self-collected."
Leonard Hill Award - Tom Grace for "*Maurea* of New Zealand."
John Dyas Parker Award - Rich Kirk for "Mother of Pearl."
Robert Fish Award - Michael Gage for "Shells of Hawaii."
Best Shell - Patricia Whitacre for *Angaria sphaerula.*
Best Shell, Self-collected - Gene Everson for *Conus theodorus.*

Karen VanderVen with her COA Award for "Volutes of the Tropical Western Hemisphere." Also shown, left to right: Ellen Strong, M.G. Harasewych, Paul Callomon, & J.B. Sessoms.

Mystery Bivalve in the Caribbean

by D. Y. Zhang

On 10 April of this year I was walking the shore of St. John's, Antigua, the largest and capital city of this marvelous Caribbean island. The tide was quite low and I took advantage of that fact to explore some infrequently exposed rocks and beds of seaweed. I came across an area that no one seemed to have walked on and found a large exposed bed of seagrass (*Halodule wrightii*) (Fig. 1). When I sifted through the seagrass to see if there were any hidden mollusks, I found thousands of small bivalves literally covering the individual blades of grass (Figs. 2 & 3). There were also dozens of small blue crabs amongst the grass, possibly feeding on the bivalves. I pulled apart three small bundles of seagrass to take back and study, hoping to be able to identify these small bivalves. These were small patches of grass (held comfortably in one hand) and yet I counted a total of 1,380 bivalves attached to the grass. The smallest shells were 4-6mm (about 6 individuals). There were about 200 shells that were over 6mm but less than 10mm, and the rest were 10-13.3mm.

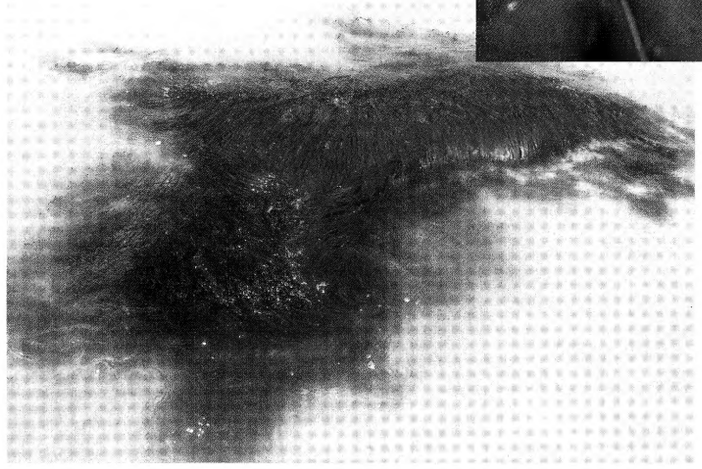


Fig. 1 One of the untouched beds of seagrass (*Halodule wrightii*) exposed by the low tide.

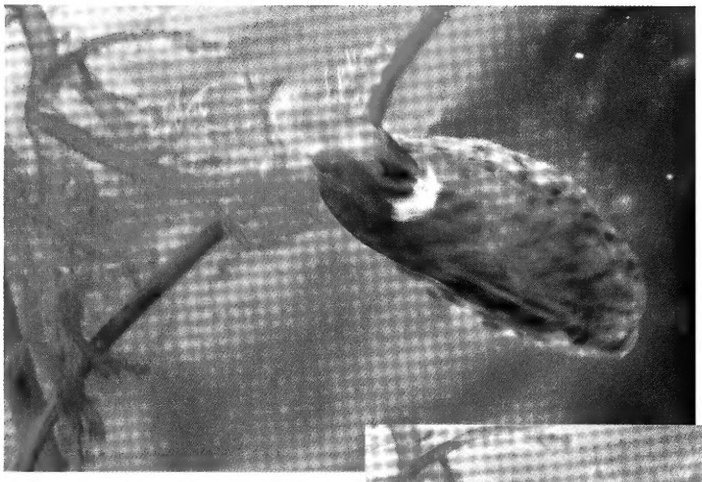
Fig. 2 The seagrass from a closer perspective showing the bivalves exposed on top. Many more were hidden within the grass cluster.

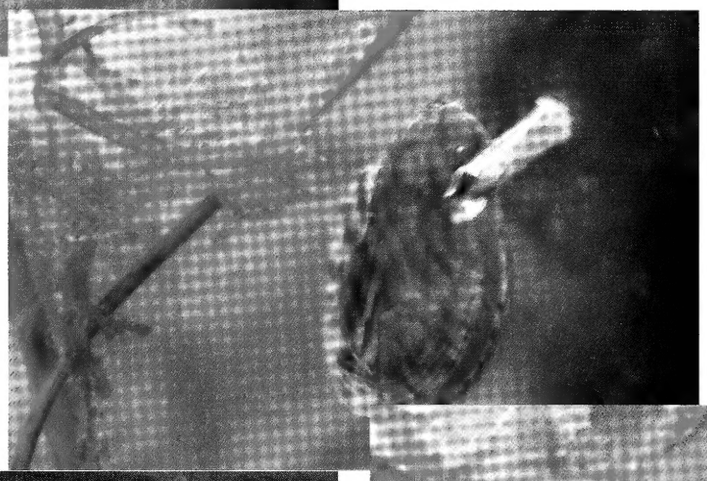
Fig. 3 A close up view of the mystery bivalves, each measuring approximately 10mm+.

I returned to the site one week later and almost all of the shells were gone. While some were certainly served up as prey to crabs or other mollusks, I believe the majority released their hold on the grass to let the tide and currents take them elsewhere. I base this upon an observation of the few remaining shells that, as I watched, released their hold on the grass and became free floating (Figs. 4, 5, & 6).

The shell are translucent green to pale greenish-brown and mottled with rayed zigzag stripes of dark green, greenish-brown, or brownish-purple. In some there was a wider band of color (green, brown, dark brown, or white) from the umbo to the posterior ventral margin. The interior of the valves is a pearly nacre. Figs. 7-8 show a typical shell, this one is 12.3mm in its longest dimension.

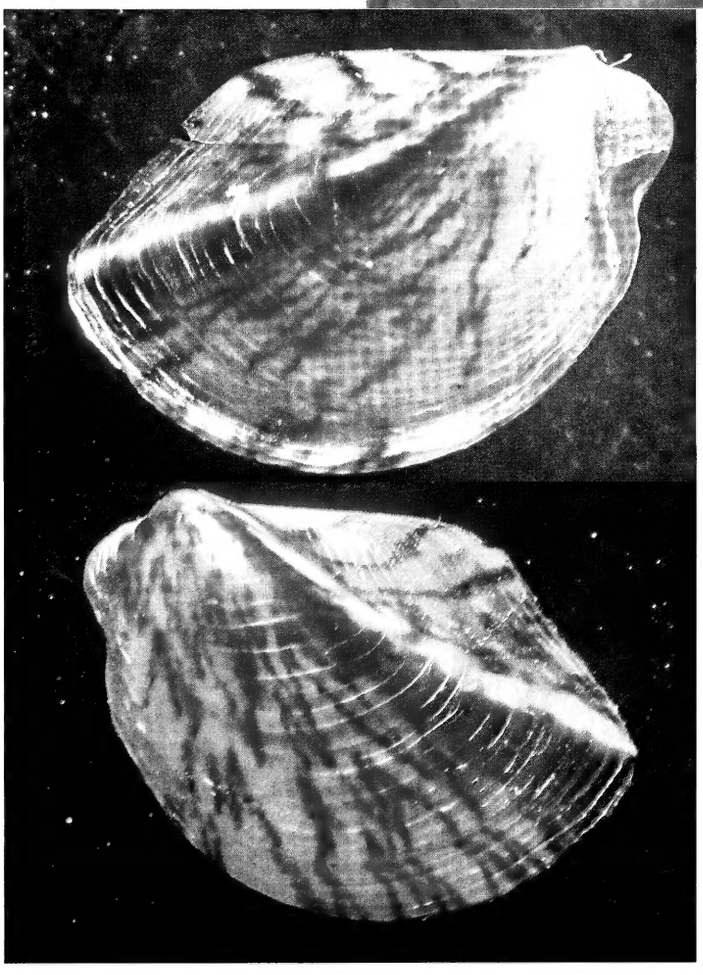
So what is this small mystery bivalve. My best guess is that this is a species of *Electroma*. This is a small genus in the family Pteriidae, the pearly oysters that include the genera: *Electroma*, *Pinctada* (pearl oysters), and *Pteria* (winged oysters). When I asked Harry Lee what he thought, he concurred with this initial identification. So why should we care about this find that may be interesting but seems rather mundane? Because, until now, they have not been found in Atlantic or Caribbean waters. This "infestation" is probably the product of a visiting ship dumping its ballast. As these things typically go, the newly introduced





(Above & right) Figs. 4, 5, & 6 The bivalve pushes away from the seagrass and becomes free floating.

(Below) Figs. 7 (right valve) & 8 (left valve) Magnified view of the *Electroma* species.



organism fails to gain a viable foothold and is soon gone from its new potential home, but we all know that sometimes the introduction succeeds. Just ask Tampa, Florida, residents about the success of the green mussel (*Perna viridis* (Linnaeus, 1758)) or anyone interested or involved with waterways in most of the United States about the zebra mussel (*Dreissena polymorpha* (Pallas, 1771)). The introduction of an alien species can have disasterous effects. This is the first recorded introduction of this species and we shall see what the future holds. I did find a few broken shells, obviously predator mutilated, on the shore (Fig. 9).

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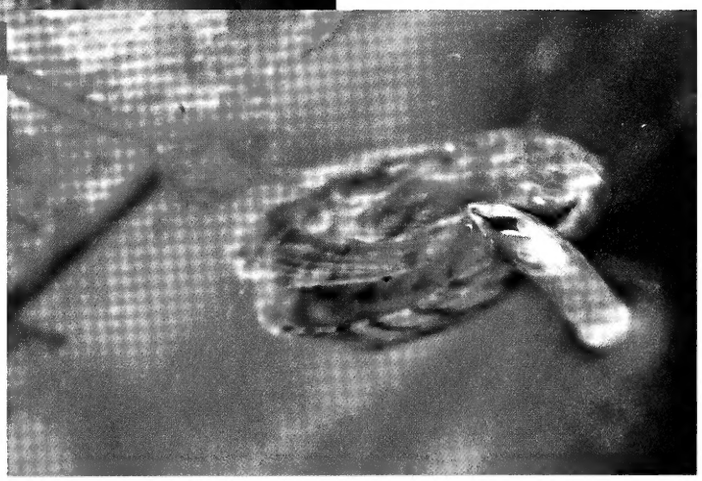

(Below) Fig. 9 A broken shell (predation?) collected on the beach.